MAY, 1961

TRAFFIC ENGINEERING

- The Importance of Urban Transit and its Effective Passenger Capacity
- Selling Your Traffic Program
- Financing and Administration of Community Parking Programs
- World Traffic Engineering Conference Preliminary Program

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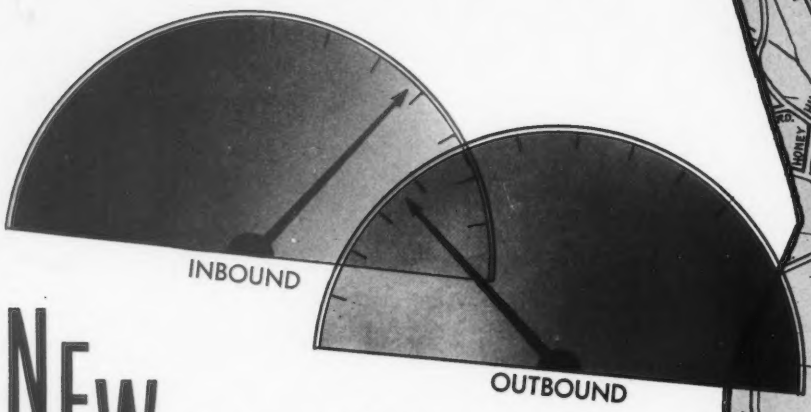

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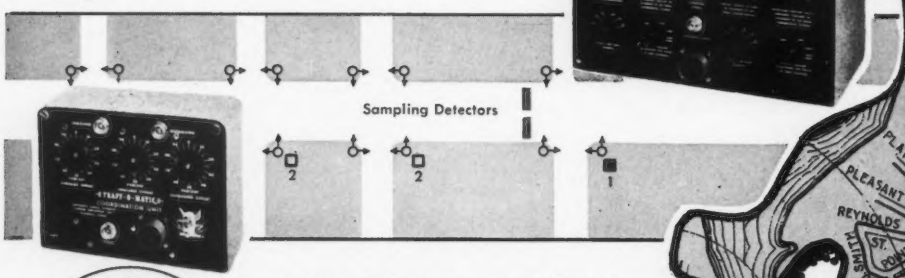

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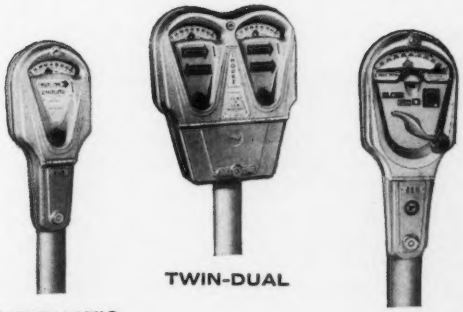

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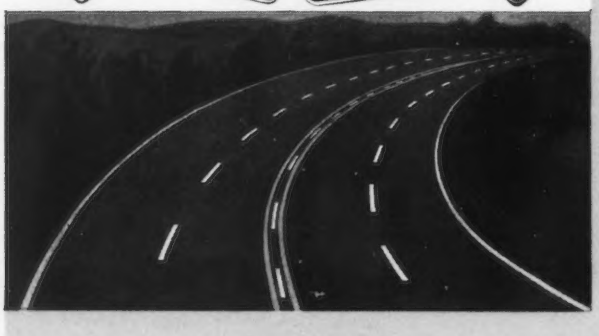

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Cover: Pittsburgh's Ohio River Boulevard is a well-marked example of a conventional four-lane roadway. Photo courtesy of Prismo Corporation

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Frankly Speaking . . .

THE NATIONAL SAFETY COUNCIL relies on its Traffic Conference for guidance in the field of traffic safety. This 100-member conference, of which 25 are ITE people, represents public officials and their associations, technical societies, automotive and related industries, and insurance companies and universities, and is concerned with all aspects of street and highway traffic that affect the safety of the public.

It recognizes that the objective of any transportation system is moving traffic in the most efficient manner possible. Both accidents and delay are indications of inefficiency in the system. Solutions to the accident problem must be developed so as to improve the efficiency of the system. Further, the conference recognizes that the primary responsibility for safety and facilitation of transportation rests with management—traffic engineers and other public officials to whom energetic and informed public support is essential.

One of the conference activities is the Annual Traffic Inventory Program, known to ITE members. It is supported financially by the Automotive Safety Foundation and serves as a guide for public officials by pointing out needs for improving the efficiency of the transportation system. It also emphasizes balance in program activity—since an ineffective enforcement or educational program and inadequate public support can be detrimental to a good traffic engineering program.

A mistaken belief held by some is that the Annual Traffic Inventory Program is a complete and comprehensive traffic survey. Rather, it is a guide pointing out needs for continued traffic control and accident prevention programming. It is an analysis procedure whereby a city's or state's performance can be compared with standards or "yardsticks" established by national professional organizations and from levels of reported activity in leading states and cities.

The Annual Traffic Inventory Program, as pointed out in the Traffic Conference Bylaws, relies upon standards and recommendations of professional and technical associations when dealing with subjects related to their respective areas of competence. National organizations, such as the International Association of Chiefs of Police, American Bar Association, American Association of Motor Vehicle Administrators and the Institute of Traffic Engineers, as well as the President's Committee for Traffic Safety, serve as advisory groups to the program. Traffic engineers establish their own measures through a committee of ITE, which plays a major role in the program. Police officers, traffic court judges, and educators do likewise. The Council administers the program, providing staff and forms to do the necessary detailed work in making available to reporting cities and states analysis reports and, in many instances, the staff for formal presentation of the reports.

The Annual Traffic Inventory Program has unquestionably brought about improvement in traffic engineering and other program areas such as enforcement and education, which enhance engineering. All are needed for an efficient transportation system.

The Traffic Inventory Award Program is based on achievement—recognizing cities and states and their officials for outstanding performance. Since the beginning of this nation, recognition for outstanding work has been a part of our American tradition. The award program provides a means for giving public recognition for outstanding work by public officials.

G. C. STEWART
Executive Vice President
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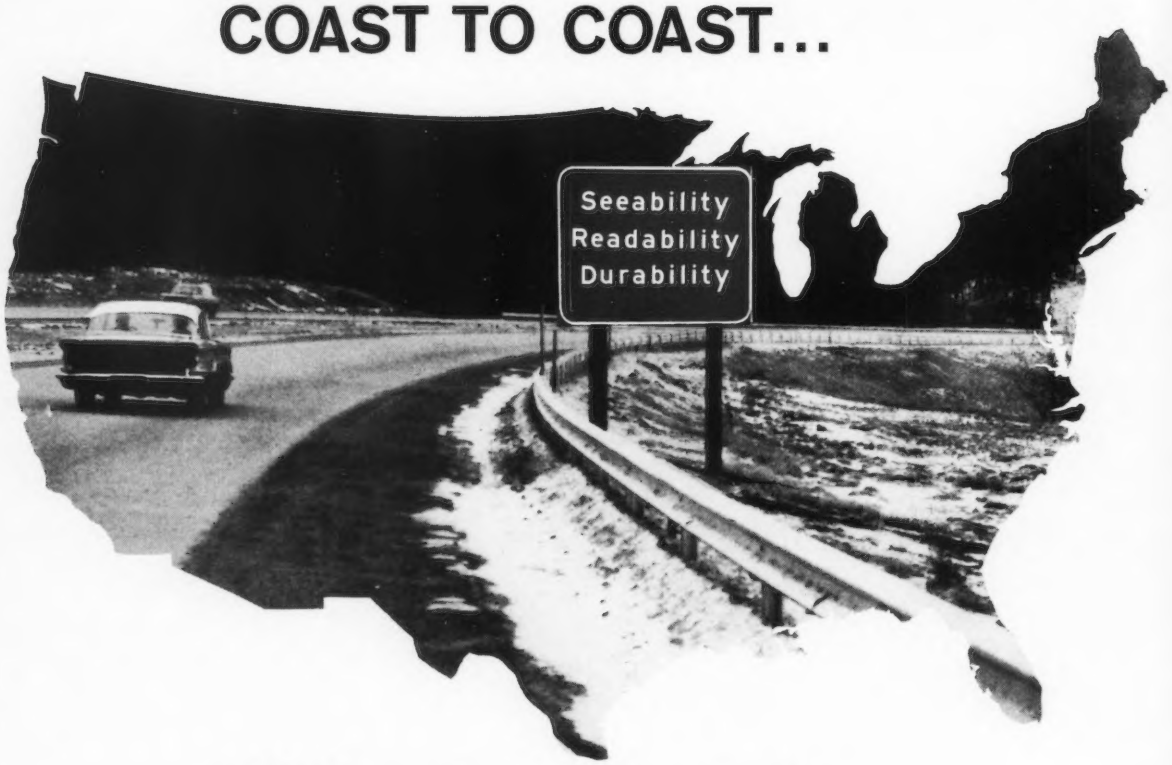

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The Importance of Urban Transit and Its Effective Passenger Capacities

By W. S. Rainville, Jr.
Director of Research,
American Transit Association

As THE BACKGROUND for a consideration of the importance of urban transit and its effective passenger capacities, let us examine briefly the urban metropolis.

Our census takers, population experts, sociologists, economists and urban planners all point to the bigger and better "metropoleis" (to use the accepted plural) of the future. Despite the drops in population reported for the arbitrarily-delineated central cities themselves, there has been tremendous growth in the surrounding suburban areas and, therefore, in the metropolitan areas as a whole. The dominant population shift is from "farm to city" —or, from rural to metropolitan area.

The growth-process of our urban communities will not be without its growing pains. Problems of area administration, financing, taxation, community services, water supply, housing and urban renewal, traffic congestion and others will increase in numbers, intensity and complexity. Not the least of the "other" problems will be that of adequate transportation for the fluid movement of people and goods—embracing the elements of (1) streets, highways and expressways, (2) off-street parking, and (3) public transit in optimum "balance."

Metropolitan area industry, commerce, education, recreation—all depend upon the adequacy of provisions for free and expeditious movement. Keeping movement "free and expeditious" will challenge the best—the most dedicated and conscientious—administrative, technical and legal talent available, all working together in concert to achieve a constructive urban program.

Change in Concept Inevitable

The past few years have seen slow, but perceptible, changes in the thinking of urban planners, administrators —yes, and even politicians—about this problem of free and expeditious movement in our metropolitan areas.

The nation, the general public, our leaders, have all been captivated by the utility and the glamour (or status-symbolism) of the private passenger automobile. Until the recent limited passion for so-called "compact cars" as a change of pace in our rapid march to Automania, the objective of builder, buyer and seller was to "build 'em bigger and fancier"; to stimulate the market for automobiles and all that goes with them in the way of resources —both material and labor. National leaders have blanched with fear at the prospect of a Michigan-based depression resulting from a slackening of the demand for new automobiles. A multi-billion dollar highway program has been spawned to insure that these vehicles will have "a road to run on" when they leave Detroit. Significantly, relatively little has been done—or can be done—about finding a place to PARK them.

Some of our national students and thinkers have long stood aghast at the tremendous waste of our resources—human and physical—involved in the inherent inefficiencies of passenger movement by private automobile in congested metropolitan areas. These lonely watchers are heartened by the slowly-awakening interest of vital thought-forces in the metropolis in approaching the problem in a different way.

It is inevitable that the planners and technicians will come to appreciate and espouse a more efficient use of our material and human resources in effecting the essential movements of persons and goods in, through and around the central city. It is inevitable that they shall discover public transit to be a highly efficient means of effecting passenger movements from the standpoints of conservation of street space and off-street space in the center city, conservation of metals, fuels, rubber and other items of vital importance to our people in time of national emergency or war, and conservation of public and private moneys. It is inevitable that from the foregoing standpoints and others, transit will become increasingly recognized—despite the efforts of the automobile-and-road-builders and their suppliers and adherents—as the preferred means of passenger transport in congested urban areas—preferred from the general, collective, public point-of-view; or, if you will, preferred by the community collectively in its own best self-interest, and notwithstanding the individual preferences and choices of the family units comprising it, which they will gladly set aside in the pursuit of the common good if they are accorded the inspired, dedicated and courageous leadership to which they are entitled in this great country.

In the President's recent special message to the Congress on HOUSING, in speaking of "improving our cities," Mr. Kennedy said, "And they must improve their transportation systems, particularly rapid transit services." Under the heading of "Community Facilities and Urban Transportation," he said "Nothing is more dramatically apparent than the inadequacy of transportation in our large urban areas. The solution cannot be found only in the construction of additional urban highways —vital as that job is. Other means for mass transportation which use less space and equipment must be improved and expanded. Perhaps even more important, planning for transportation and land use must go hand in hand as two inseparable aspects of the same process."

Importance of Transit Recognized in 1957 AASHO Urban Highway Policy Manual

In its 1957 handbook entitled "A Policy on Urban Arterial Highways in Urban Areas," the Committee on Planning and Design Facilities of the American Association of State Highway Officials had this to say about public transit:

"Arterial highways provide for the efficient movement of people and goods, not vehicles alone, and it may be desirable to locate and design highways for use in combination with a transit facility." (page 86)

"Public transit may affect not only the geometric design of the arterial highway but its location; thus, provision for public transit should not be an afterthought, but an item for consideration in the early stages of design. Thorough analysis is necessary in regard to the origin and destination of transit riders, capacity requirements, and present and future public transportation needs. Hence, the cooperative effort of both highway and transit engineers is necessary to assure proper consideration of all features." (page 140)

"*Passenger Carrying Capacity.* In terms of passengers accommodated, a public transit vehicle, while it is moving, is a more efficient user of street space than a private automobile. The volume of passengers transported depends upon the type of highway, the type of mass carrier, the headway of transit vehicles, and their passenger carrying capacity." (page 141)

The policy manual then goes on to devote a total of some 30 pages to consideration of public transit on major streets, on at-grade expressways, on depressed freeways, and on elevated freeways, along with some dozen illustrations covering bus turnouts and stop facilities at freeway and street levels for various types of interchanges, and including facilities for rapid transit trains in an expressway median strip.

In general—and aside from the omission of certain basic "quantifying" relationships—transit is treated in the AASHO manual as a valued user of the nation's streets and highways, and is commended to the early consideration of the highway engineer as a present and potential element of the urban transportation system.

TABLE 1

Vehicle	Type of Facility	Lane Practical Capacity, Vehicles
Automobile	City Street	600 per hour
Automobile	City Street	800 per hour
Automobile	Expressway	1,500 per hour
Automobile	Expressway	2,000 per hour

TABLE 2

Facility	Lane Practical Capacity, Vehicles	Effective Passenger Capacity @ 1.25	@ 1.50	@ 1.75	@ 2.00
City Street	600 per hour	750	900	1,050	1,200
City Street	800 per hour	1,000	1,200	1,400	1,600
Expressway	1,500 per hour	1,875	2,250	2,625	3,000
Expressway	2,000 per hour	2,500	3,000	3,500	4,000

TABLE 3

Lane Practical Capacities—Transit Bus[2]

Vehicle	Type of Facility	Vehicles per Lane per Hour	Headway (min.)	Effective Passenger Capacity (Pass. Per Hr. — Range)
Transit bus	City Street	60	1.000	3,720 — 4,500
Transit bus	City Street	90	0.667	5,580 — 6,750
Transit bus	City Street	120	0.500	7,440 — 9,000
Transit bus	Expressway	120	0.500	7,440 — 9,000
Transit bus	Expressway	180	0.333	10,860 — 13,500
Transit bus	Expressway	240	0.250	14,880 — 18,000

[2]Assumptions: (Range)
Transit bus—50-seat, loaded to[2] ..... 125% 150% of seats

It is the purpose of this paper to supply some of those important relationships showing the relative "effective passenger carrying capacities" of the private automobile and the various forms of public transit. These should prove of interest and assistance to the highway engineer, the traffic engineer, and the planner.

The Private Passenger Automobile

Let us take the private passenger automobile as a starting point, and look to the Highway Capacity Manual, and at the work of traffic engineering consultants elsewhere, for examples of what this conveyance can do.

Examples are shown in Table 1.

Let us also examine the results of innumerable central business district cordon counts taken over the years during the heavy hours of movement of retail and office workers, shoppers, etc. These reveal average occupancies of the private automobile, including the driver, ranging from 1.25 to 1.75 rush-hour occupants moving into and out of the C. B. D., with a "usual" average occupancy under such conditions of 1.4 to 1.5 occupants.

Let us add an "extreme" column for an average occupancy of 2.00[1]—seldom if ever attained as an hourly rate during the rush hours to and from the central business district, and construct Table 2 for various average passenger occupancies.

Thus, we get some idea of what the automobile does and can do, as a "private and individual" means of transportation, in moving persons to and from a CBD in rush hours.

Table 3 shows the transit bus in peak-hour service.

A Comparison of the Effective Passenger Capacities of the Automobile and the Transit Bus

Comparing Tables 2 and 3, we now have the elements at hand for determining a relationship:

(1) A transit bus on a city street

1 Automobile riding to and from central business districts during rush hours does not, as a matter of observation, "average out" at occupancies of 2.0 or greater. Apparently, most motorists and their families own their automobiles for the "exclusiveness and distinction" they enjoy thereby and do not **generally** seek to load up their cars with fellow-CBD-bound travelers.

2 Data on peak-hour transit bus operations covering 34 CBD arterial "throats" in 15 cities show an average peak-hour load factor "extreme" range of 120% to 157% of seating capacity, with most observations falling within the range of 125 to 150 per cent of seated load.

operating on a headway of 60 seconds (60 buses per hour) has an effective passenger capacity of 3,720 persons per hour at 125% load factor.

The private automobile on a street lane operating at a rate of 800 vehicles per hour and carrying an average of 1.5 occupants has an effective passenger capacity of 1,200 persons per hour.

3,720 divided by 1,200 equals 3.1.

Hence, one such lane of buses on a city street has an effective passenger capacity equal to that of 3.1 lanes of automobiles.

(2) A transit bus on an expressway lane operating on a peak-hour headway of 30 seconds (120 buses per hour) has an effective passenger capacity of 9,000 persons per hour at 150% load factor.

The private automobile on an expressway lane operating at a rate of 1,500 vehicles per hour and carrying an average load of 1.5 occupants has an effective passenger capacity of 2,250 persons per hour.

9,000 divided by 2,250 equals 4.

Thus, one such lane of transit buses on an expressway has an effective passenger capacity equal to that of *four* lanes of automobiles.

(3) A transit bus on an expressway lane operating on a peak-hour headway of 20 seconds (180 buses per hour) has an effective passenger capacity of 10,860 persons per hour at 125% load factor.

The private passenger automobile on an expressway lane operating at a rate of 2,000 vehicles per hour and carrying an average load of 1.5 occupants has an effective passenger capacity of 3,000 persons per hour.

10,860 divided by 3,000 equals 3.62.

Therefore, one such lane of transit buses on an expressway has an effective passenger capacity equal to that of 3.62 such lanes of automobiles.

Similar "analyses," comparisons, or determinations of "equivalents" may be readily undertaken for any set of assumptions desired. (See nomograph Chart I.) On the basis of the reasonable assumptions of the foregoing "sample" comparisons, it might be said that under these entirely attainable conditions, one lane of peak transit buses can handle as many persons per hour as can be moved by three to four lanes of automobiles. This suggests a lane efficiency of 3 or 4 to 1 in favor of the transit bus.

This is an important relationship for the planner (highway or otherwise) to bear in mind when seeking the solution of urban transportation problems in terms of money and space—especially in view of the added feature that those "bus riders" will not need to have parking spaces provided for them in the congested downtown area.

Rail Rapid Transit

Rail rapid transit systems can and DO carry persons at rates of 40,000 per hour and more to and from central business districts at rush hours. Under today's track, signal, station, platform stairway, ramp, escalator and elevator capacities, it is a demonstrable fact that trains can safely be moved on headways as close as 90 seconds. The technology is available for extending these limitations. But accepting them for purposes of this analysis, Table 4, effective passenger capacities, sets forth the abilities of rail rapid transit on a modest basis.

See the nomograph in Chart II for more complete range of values for trains of 2 to 10 cars of "average" size.

(1) A rapid transit train of 8 such cars operating on a 2-minute headway has an effective passenger capacity of 28,000 persons per hour.

The private automobile on an expressway lane operating at a rate of 1,500 vehicles per hour and carrying an average of 1.5 occupants has an effective passenger capacity of 2,250 persons per hour.

28,000 divided by 2,250 equals 12.44.

Thus, such a rail rapid transit system operating over a single track in the prevailing direction has an effective passenger capacity equal to that of 12 such lanes of automobiles.

(2) A rapid transit train of 10 such cars operating on a 90-second headway has an effective passenger capacity of 48,000 persons per hour.

The private passenger automobile on an expressway lane operating at a rate of 1,500 vehicles per hour and carrying an average of 1.5 occupants has an effective passenger capacity of 2,250 persons per hour.

48,000 divided by 2,250 equals 21.3.

The private automobile on an expressway lane at 2,000 vehicles per hour and an average occupancy of 1.50 persons has an effective passenger capacity of 3,000 persons per hour.

48,000 divided by 3,000 equals 16.0.

Thus, such a rapid transit system has an effective passenger capacity equal to that of 16 such lanes of automobiles at 2,000 vehicles per lane per hour, or equal to that of 21 such lanes of automobiles at 1,500 vehicles per hour.

The examples chosen suggest a lane efficiency ranging from 12 to 1 to 20 to 1 in favor of the rail rapid transit. Again, as in the case of the transit bus, this is an important relationship for the highway engineer and the planner to keep in mind when considering the transportation needs of urban metropolitan areas—especially in view of the lack of parking requirements for the rail rapid transit passengers in the central business district. Parking lots along the transit route at outlying points can facilitate a desirable "wedding" of the advantages of the automobile where it can best serve (in outlying areas) and rapid transit where it can best serve (in the more congested area), from an overall community point of view.

Some Questions Answered

In the February 1961 issue of "Traffic Engineering" there appeared an item entitled "*Let's Analyze It!*" This item was carried by the magazine in a "box" to attract attention and, speaking of the relative "effective passenger capacities" of transit and the automo-

TABLE 4

Lane Practical Capacities[3]

(Subway or elevated, on private right of way, or in center mall of an expressway)

Type of Vehicle	Trains per Hour	Headway (min.)	Effective Passenger Capacities (Range)
Rapid)	20	3.0	18,000 — 24,000
Transit)	30	2.0	27,000 — 36,000
Train)	40	1.5	36,000 — 48,000

[3]Assumptions: rapid transit 10-car train, carrying value— 90 — 120 pass./car

ATA 6/15/60

CHART II

OBSERVED VALUES OF TRANSIT'S EFFECTIVE PASSENGER CAPACITY

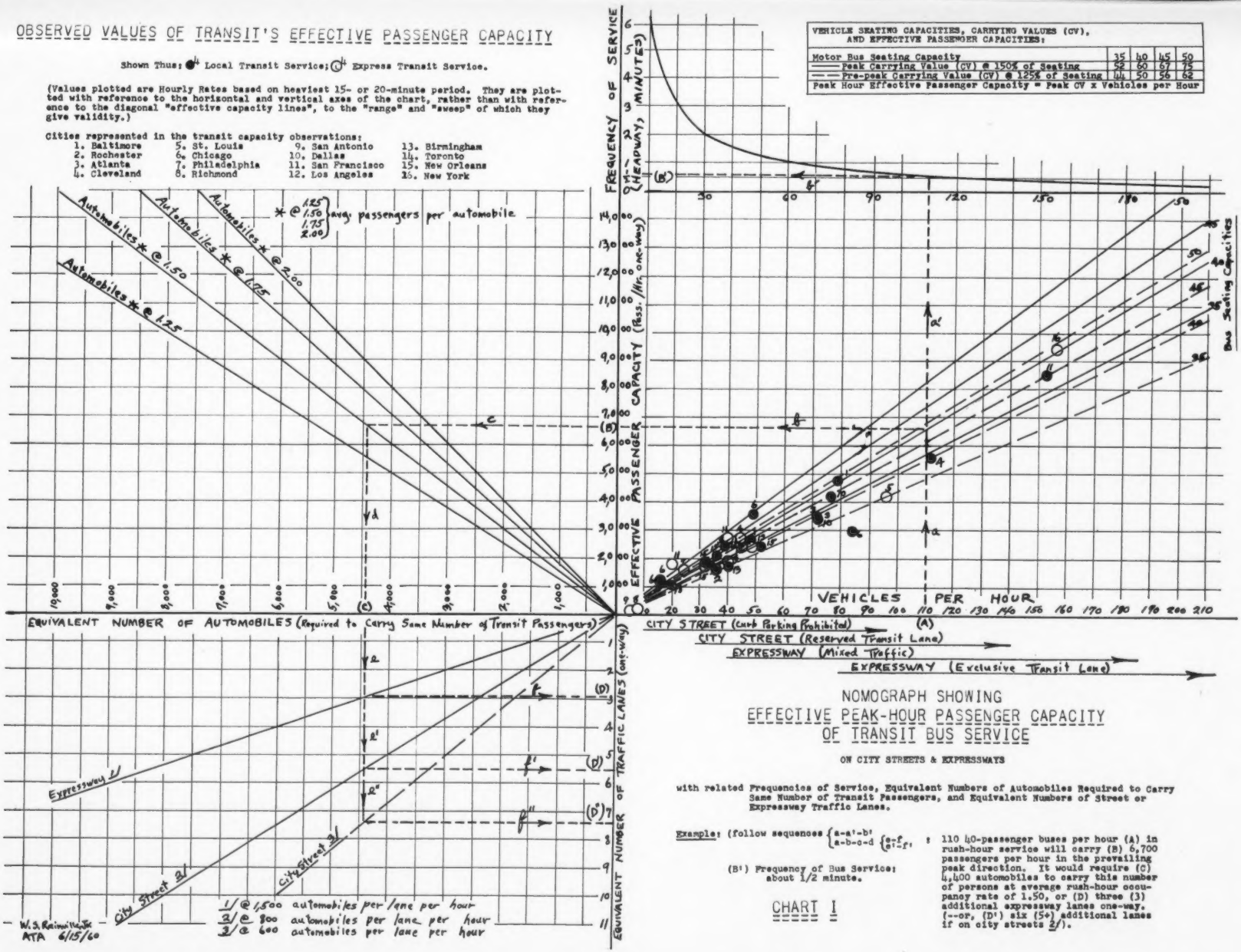
Shown Thus: ● Local Transit Service; ⊙ Express Transit Service.

(Values plotted are Hourly Rates based on heaviest 15- or 20-minute period. They are plotted with reference to the horizontal and vertical axes of the chart, rather than with reference to the diagonal "effective capacity lines", to the "range" and "sweep" of which they give validity.)

Cities represented in the transit capacity observations:

1. Baltimore	5. St. Louis	9. San Antonio	13. Birmingham
2. Rochester	6. Chicago	10. Dallas	14. Toronto
3. Atlanta	7. Philadelphia	11. San Francisco	15. New Orleans
4. Cleveland	8. Richmond	12. Los Angeles	16. New York

VEHICLE SEATING CAPACITIES, CARRYING VALUES (CV), AND EFFECTIVE PASSENGER CAPACITIES:				
Motor Bus Seating Capacity	35	40	45	50
——— Peak Carrying Value (CV) @ 150% of Seating	52	60	67	75
— — — Pre-peak Carrying Value (CV) @ 125% of Seating	44	50	56	62
Peak Hour Effective Passenger Capacity = Peak CV x Vehicles per Hour				


FREQUENCY OF SERVICE (HEADWAY, MINUTES)
EFFECTIVE PASSENGER CAPACITY (Pass. /Hr. one-way)
Bus Seating Capacities
VEHICLES PER HOUR
Automobiles * @ 1.25
Automobiles * @ 1.50
Automobiles * @ 1.75
Automobiles * @ 2.00
* @ 1.25 / 1.50 / 1.75 / 2.00 } avg. passengers per automobile
EQUIVALENT NUMBER OF AUTOMOBILES (Required to Carry Same Number of Transit Passengers)
EQUIVALENT NUMBER OF TRAFFIC LANES (one-way)
Expressway 2/
City Street 2/
1/ @ 1,500 automobiles per lane per hour
2/ @ 800 automobiles per lane per hour
3/ @ 600 automobiles per lane per hour
CITY STREET (Curb Parking Prohibited)
CITY STREET (Reserved Transit Lane)
EXPRESSWAY (Mixed Traffic)
EXPRESSWAY (Exclusive Transit Lane)

W. S. Rainville
ATA 6/15/60

NOMOGRAPH SHOWING EFFECTIVE PEAK-HOUR PASSENGER CAPACITY OF TRANSIT BUS SERVICE

ON CITY STREETS & EXPRESSWAYS

with related Frequencies of Service, Equivalent Numbers of Automobiles Required to Carry Same Number of Transit Passengers, and Equivalent Numbers of Street or Expressway Traffic Lanes.

Example: (follow sequences {a-a'-b' / a-b-c-d {e-f / e'-f'}: 110 40-passenger buses per hour (A) in rush-hour service will carry (B) 6,700 passengers per hour in the prevailing peak direction. It would require (C) 4,400 automobiles to carry this number of persons at average rush-hour occupancy rate of 1.50, or (D) three (3) additional expressway lanes one-way. (--or, (D') six (5+) additional lanes if on city streets 2/).

(B') Frequency of Bus Service: about 1/2 minute.

CHART I

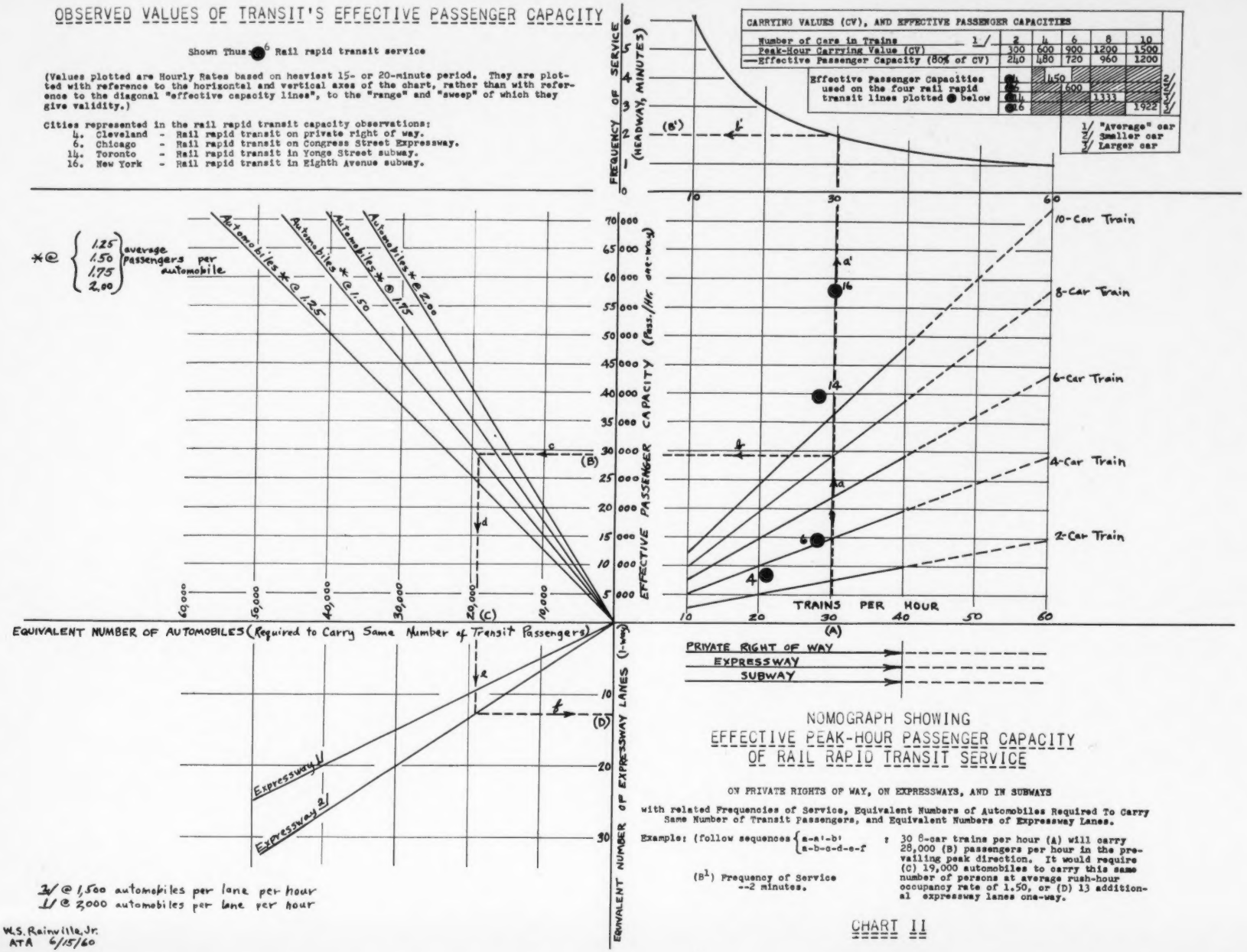
OBSERVED VALUES OF TRANSIT'S EFFECTIVE PASSENGER CAPACITY

Shown Thus ●[6] Rail rapid transit service

(Values plotted are Hourly Rates based on heaviest 15- or 20-minute period. They are plotted with reference to the horizontal and vertical axes of the chart, rather than with reference to the diagonal "effective capacity lines", to the "range" and "sweep" of which they give validity.)

Cities represented in the rail rapid transit capacity observations:

4. Cleveland - Rail rapid transit on private right of way.
6. Chicago - Rail rapid transit on Congress Street Expressway.
14. Toronto - Rail rapid transit in Yonge Street subway.
16. New York - Rail rapid transit in Eighth Avenue subway.


CARRYING VALUES (CV), AND EFFECTIVE PASSENGER CAPACITIES
Number of Cars in Trains 1/ 2 4 6 8 10
Peak-Hour Carrying Value (CV) 300 600 900 1200 1500
Effective Passenger Capacity (80% of CV) 240 480 720 960 1200
Effective Passenger Capacities used on the four rail rapid transit lines plotted ● below
● 4 1450
● 6 1600
● 14 1333
● 16 1922
1/ "Average" car
2/ Smaller car
3/ Larger car
FREQUENCY OF SERVICE (HEADWAY, MINUTES)
EFFECTIVE PASSENGER CAPACITY (Pass./Hr. one-way)
TRAINS PER HOUR
10-Car Train
8-Car Train
6-Car Train
4-Car Train
2-Car Train
*@ 1.25 1.50 1.75 2.00 average passengers per automobile
Automobiles *@ 1.25
Automobiles *@ 1.50
Automobiles *@ 1.75
Automobiles *@ 2.00
EQUIVALENT NUMBER OF AUTOMOBILES (Required to Carry Same Number of Transit Passengers)
EQUIVALENT NUMBER OF EXPRESSWAY LANES (1-way)
Expressway 1/
Expressway 2/
PRIVATE RIGHT OF WAY
EXPRESSWAY
SUBWAY

1/ @ 1,500 automobiles per lane per hour
2/ @ 2000 automobiles per lane per hour

W.S. Rainville, Jr.
ATA 6/15/60

NOMOGRAPH SHOWING EFFECTIVE PEAK-HOUR PASSENGER CAPACITY OF RAIL RAPID TRANSIT SERVICE

ON PRIVATE RIGHTS OF WAY, ON EXPRESSWAYS, AND IN SUBWAYS

with related Frequencies of Service, Equivalent Numbers of Automobiles Required To Carry Same Number of Transit Passengers, and Equivalent Numbers of Expressway Lanes.

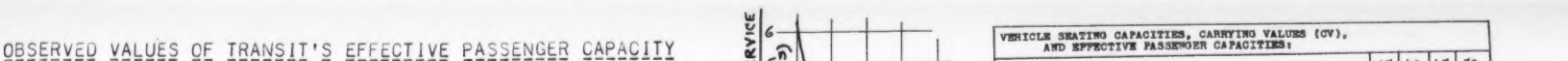
Example: (follow sequences {a-a'-b' / a-b-c-d-e-f

(B^1) Frequency of Service --2 minutes.

: 30 8-car trains per hour (A) will carry 28,000 (B) passengers per hour in the prevailing peak direction. It would require (C) 19,000 automobiles to carry this same number of persons at average rush-hour occupancy rate of 1.50, or (D) 13 additional expressway lanes one-way.

CHART II

OBSERVED VALUES OF TRANSIT'S EFFECTIVE PASSENGER CAPACITY



bile, it raised the following questions, among others:

(a) But when all is said and done, what good is such a comparison anyway?

(b) Are we interested in what can be done WITH people or TO people, or what people probably WILL do?

(c) And to what degree should this comparison of people passing a point during a single hour be the determinant of the desirability, or even the efficiency, of a facility?

(d) What about Sunday traffic? Freeways often carry more people on week-ends than on weekdays, while transit tracks lie virtually idle.

(e) What about time of trip from end to end? Rail transit can claim high speeds between stops, but what about stops at stations, time lost in waiting for trains, time spent in waiting at transfer points, and time spent in walking from transit vehicles to home or office or store?

Here are some answers to these questions:

(a) *The Comparison:* Such a comparison is important because it draws the attention of the highway engineer and planner, the politician, and the taxpaying public—motorist or otherwise—to the fact that there *is* a more efficient and more economical way of doing the job of moving persons in urban metropolitan areas which *should be carefully investigated* before an open-and-shut decision is made to *attempt* to do the job by building more expressways for more automobiles. . . . It is just as important for people to know these relationships as it is for them to know that the automobile-and-highway alone cannot do the job for the central business district-bound passenger traffic.

(b) *The People:* We must—of necessity—become concerned with what people *should* do (as well as with what they *want* to do), individually and collectively, in the best interests of the urban metropolitan community. This calls for informed, courageous leadership by our elected and appointed public officials at all levels for governmental operation—local, state, regional and national. It calls for showing the public in plain, understandable terms what will happen to our urban society if they are permitted to do as they "*will* to do" with the private automobile, as opposed to the desirable alternatives in urban development which may result from the adoption of a *balanced* transportation program—streets and highways, improved public transit, and additional off-street parking in the proper places—in the optimum combination for a given community's needs.

(c) *The Peak Hour:* There is a practical job to be done each week-day in the metropolitan area—that of moving workers, shoppers, etc., to the central area of activity (as well as elsewhere) and back home again. The bulk of such movements usually takes place over relatively short and congested—but extremely important—periods of time. To gather the necessities and luxuries of life, including the "fish-tailed" or even the so-called "compact" varieties, and to pay their taxes in support of the highway and expressway systems, persons must occasionally work to "earn their keep"; and must, if employed in the C. B. D., get to and from work over routes or "throats" which at one point, or along one stretch, become the "heaviest" in terms of persons per hour having to move through. These are the most important points from the standpoint of passenger movement. They are as significant to the transit technician as is the formula for mixing concrete to a highwayman.

Just as you can bail more water in a hurry from a foundering boat with a bucket than you can with a spoon, so you can do a better job of moving people through congested streets to and from the central business district in the rush hour—an extremely import hour in the commercial life of the community—with a public transit vehicle than with a multitude of automobiles. The ratios?

One lane of transit buses equals up to *four* lanes of automobiles.

One lane of rail rapid transit equals up to *twenty* expressway lanes!

(d) *Sunday Traffic: Idle Transit Tracks:* Fine—we hope the recreation-bound Sunday motorists enjoy their freeways and use them safely! . . . and, that all the fine luxury vehicles using them are in good mechanical condition so that there are no break-DOWNS and tieUPS.

Come Monday Morning, however, the wage-earner must "get back to business" to "pay the freight" on his Sunday recreational activities and to provide his family with the basic necessities and other luxuries of life—such as the taxes he pays in support of his leisure time pursuits. Here, in this most important aspect of family life, the sleeping Sunday rail cars and trackage come to life and handle the passenger traffic needs of this most important hour of the day in doing a job which the private automobile alone would find impossible of accomplishment.

That the transit facilities are not used to capacity off-peak, Saturdays and Sundays is an economic fact-of-life which public officials will eventually have to accept—and try to alleviate—in maintaining and improving the public transportation facilities without which the community cannot prosper. The realization must and will become more general through a fact-finding and courageous public educational program that the auto-and-highway alone cannot do the job. Public officials themselves will be forced by the passage of events to tackle this (as now considered) "disagreeable" task in many metropolitan areas in order to preserve the values and advantages, economic and cultural, of a strong central city area.

(e) *Transit Travel Times:* Such elements of time as mentioned by the questioner are admittedly inherent in the use of transit service. . . . Just as inherent, in fact, as certain elements of time involved in the use of the family car in home-to-work movements: unlocking the garage door, backing out into the street; waiting at traffic signals and stop signs en route to and from the expressway; cruising to find a parking space, a parking lot, a parking garage; walking from the hard-won parking space to the office or store. If you are in a car pool, add waiting time for the pool driver to arrive, or, if you are he, waiting for your passengers to finish their morning coffee or shave. Add, when the car breaks down, time wasted in trying to "get it going" before abandoning it (for that trip, of course!) in favor of the bus. Add, in winter, the time spent shoveling the drive or thawing the carburetor, or putting on or taking off chains. Well . . . you can take it from there!

The questioner of the February, 1960, issue asked another one:

(f) Over 300,000 people move over the Hollywood Freeway on a typical

(Continued on page 19)

Selling Your Traffic Program

By John W. Gibbons
Director of Public Relations
Automotive Safety Foundation

If the world survives our century, so that historians can write about it, one of the interesting details they will want to check into is the birth and rapid maturity in the United States of an activity called public relations.

By that time, events will have decided whether to call it a business, a craft or a profession. At present the public relations practitioners themselves are at odds on that question. My personal guess is that long before this century is over, it will be definitely identifiable as a profession. I base this on the fact that several colleges and universities now award degrees in the field, and many more offer public relations courses.

In addition, a considerable body of literature is being produced; more and more positions in top management are being filled by men from the public relations departments, and the whole activity is benefiting from the recruitment of young men and women whose vision and competence are sure to upgrade performance in this relatively new area of work.

The future historian will discover that 1961 was a key date in public relations. This year the two big national organizations in the field are merging: The Public Relations Society of America and the American Public Relations Association. This merger is itself a symbol of maturity, for it has been achieved through much sacrifice on both sides, and it represents the culmination of several years of thoughtful and responsible deliberation.

Public relations had its origin during the early part of the century in what was called press agentry. It was a wild and swashbuckling business, full of colorful characters who invented improbable gimmicks to get publicity, almost never got caught telling the simple truth, and managed to establish themselves in the public mind as totally and happily irresponsible.

Public relations in government was suspect in those days. Often the main idea was to get personal advertising for the elected official who had to run again. And the output seemed to increase noticeably at campaign time.

In these circumstances, you could hardly expect state legislators or members of Congress to give much support to press agentry in public office. For a long time lawmakers were justifiably suspicious of all programs in this field.

The turning point in public relations occurred some time between the two world wars. Perhaps, with added perspective, the future historian may be able to pinpoint it more precisely. But perhaps not. Because even from the beginning there always have been some men like T. J. Ross, in New York, in the field, whose concepts of public relations transcended the press agent techniques of their time. They preached the importance in our increasingly complex society of an informed public opinion as the basis of sound judgment. They pointed out the responsibility of business and government leadership to provide the necessary information, fairly and frankly. Gradually their influence and example affected thinking and practice in the field; public relations began to acquire a foundation of ethical principles.

Today the need for continuing and effective public information programs is widely recognized in both public and private affairs. And while there still exist many border-line activities calling themselves public relations, especially in connection with legislative lobbying, the main body of practitioners now enjoys an acceptance which clearly indicates that another new type of activity has come of age.

I have indulged in this rather long preamble because of the title given to my remarks in the program: "Selling Your Traffic Program." That word "selling" worries me a little; the idea of "salesmanship" might have connotations, particularly to engineers, associated with high-powered campaigns, phony gimmicks and other hangover symptoms from the days of press agentry.

Such a concept has no place in the traffic field. It isn't needed. The program will be sold best, in the long run, by honest and consistent dissemination of the facts to the public.

The simple truth is that the most important single element in any effort to sell a traffic program—the "first essential"—is not a public information technique at all! It is an attitude of mind on the part of the traffic administrator and his staff.

He must accept personal responsibility for keeping the public informed fully of the problems of his office, the program designed to solve them, and of progress or lack of it. This responsibility is a day-after-day thing; an integral part of major administrative decisions. Public relations can not be effective if it is regarded merely as an appendage to the organization; a sort of "Mr. Fixit" to be called in now and then for emergencies.

Former Prime Minister MacKenzie King, of Canada once said, "Government, in the last analysis, is organized public opinion." I am firmly convinced that a traffic administrator, who accepts that premise will do a far better job of selling his program by *personal contacts alone* than will another

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man with an elaborate public information set-up—but with no real acceptance of personal responsibility.

Public information has to start with personal contacts. In spite of the miracles of our electronic age, which has given us radio and television, and in spite of today's superb coverage of public affairs by newspapers and magazines, the top priority among all channels of communication for the traffic administrator is still old-fashioned personal contact, man to man.

Sincerity and enthusiasm are highly contagious. Nothing is more convincing, nor helps more to inspire confidence in a man, an agency or a program, than to hear someone who obviously is sincere tell about what he is doing and why. If he is proud of the organization, his pride will show through. If he has difficult problems, his candor and sincerity will elicit sympathy.

Personal activities will be more productive, of course, if the contacts are made with opinion-forming people; that is, with civic, business and professional leaders who are in position to do the most about the situation.

They will be more productive, too, if the program is presented not just in technical terms, but in terms of the benefits which the public will enjoy as result of it. Traffic engineering is not an end in itself; its purpose is better transportation service. This means convenience, safety and economy of movement. People are interested in those things.

Each delegation that comes into your office is important, and all other opportunities which the day-to-day job creates for person-to-person contacts. Every single conversation with a citizen registers either plus or minus on the final score.

I have been speaking about something which you yourself can do, as the administrator in charge of traffic engineering. Needless to say, other members of your organization are going to catch your contagious enthusiasm; they, too, will become emissaries. This applies all the way down the line. The fellow who paints the crosswalk or installs a sign is a roving ambassador of either good will or bad. If he knows your attitude on the importance of good relations with the public, and if he has had an opportunity to be infected with some of your pride and enthusiasm, he can be a highly important factor in the selling program.

I take for granted the program you are promoting is a good one, the best possible. If it isn't, then one of two courses are open; either (1) explain frankly the conditions which for the present make something better impossible; or (2) don't talk about it at all, and spend the time instead working up something else. No public relations program has been invented which can substitute satisfactorily for a competent technical job, nor which can successfully whitewash a poor one.

So much for personal contacts. Next comes an extension of this effort to more people through the channels of communication in your city, county or state. This is the area usually thought of as "public information," because it is the part of the job in which specific techniques are required to get maximum results.

Numerous media are available to you. Weekly and daily newspapers, radio, television, association bulletins, magazines, business and industry publications, motion pictures, slide films, posters, demonstrations, exhibits, advertising—the list is long and opportunities are legion.

If you are working in a comparatively small community, so that the employment of public information personnel is difficult, many of these media still offer real opportunity for selling your program. Again, it is primarily a question of personal contact; with the editor and reporter, for example, the broadcast station manager, the association executive.

However, each of the media has special requirements of its own as to type of material and format. The information about your program should be selected and prepared in a manner which will encourage its use. This means you will need the services of someone with background and experience in the public information field.

Sometimes you can recruit the help of public information personnel from outside organizations having an interest in the success of your program, such as motor clubs, chambers of commerce, safety councils, and so forth. A part-time helper can make a great deal of difference.

The likelihood is that the weekly or daily press is the medium with which you have most frequent contacts. I suppose, too, that in some cases it is the one which gives you the most headaches. Relationships between newspapers and traffic engineers range all the way from wholehearted and successful cooperation down to open warfare.

How can the best press relations be maintained? I don't have any pat answer to that question. There isn't any. But a few general observations might be in order. First, it is wise to distinguish, if possible, between the editorial policy of a newspaper and the man who calls on you for news. Try to maintain cordial and frank relations with the reporter who calls on you. It is not at all unusual for a newspaper to publish news of your activity on one page, while in the same issue it is lambasting your program on its editorial page.

Second, keep the paper fully informed, even if the editor is attacking you. This may be something of a challenge when your pet project is held up to ridicule by someone you consider to be an ignorant and prejudiced layman. But it's worth doing. The force of facts quite often can overcome the bias of hearsay.

Third, and here I will repeat myself: Keep making those personal contacts. Indeed, this is more important than ever if you are not getting what you consider to be a "fair shake" in the columns of a newspaper.

Fortunately, bad relations with the press are not the rule; they are the exception. Newspapers generally are interested in your program because people are interested in traffic. In addition, most editors and publishers are anxious to contribute to the common welfare in every way they can. Your traffic program has high priority among the social and economic problems of the community.

The weekly and daily newspapers have one big advantage over many other media: they can deal with a subject in detail. Certainly it is of great importance in selling the traffic program to see to it that all the papers in your jurisdiction are provided with all of the news and features you can give them.

This raises the question of what news is. Sometimes traffic engineers give newspapers information of "tremendous importance" (to the engineers) but it doesn't get published. The chances are that in the judgment of an editor that information simply wasn't news. Perhaps it was too technical. Or too general. In any event, it is wise to remember that judging news is the editor's business, and almost all editors are real experts at it.

A public information man sometimes can find news in a technical report. So can the reporter from the newspaper, if he has the time, and if you two have a cordial relationship, so that you can chat about it.

Once in a while a traffic engineer tells me that the reporter who covers his office is not competent to handle technical subject matter. He complains that important data come out in garbled fashion. In such cases, typewritten releases, rather than interviews, should be used, in order to make sure the correct information is spelled out. At the same time, an effort should be made to give the reporter a better understanding of the subject by spending some time with him. Don't forget, the fault may not always lie with the reporter.

Such cases fortunately are getting rare. The competence of news coverage in public affairs today is far greater than it was a few years ago. If you are open and above board with a reporter, taking him fully into your confidence, he will become, in the course of duty, a star salesman for your traffic program.

Television is an ideal medium for traffic news because a situation often can be pictured on a screen with greater clarity than it can be with words. Broadcasters and traffic administrators are cooperating usefully in many communities. Flannel boards; diagrammatic panels with street layouts and toy vehicles, and similar devices make it possible to translate fairly complicated traffic engineering information into readily understandable viewing.

Still better, of course, are taped or live shots taken on the scene. Many broadcasters are looking constantly for new and interesting program materials; it's just a matter of developing some good ideas, taking them to the stations, and offering your cooperation in their production.

Radio, as you know, is a booming industry. From the standpoint of traffic, this medium has an advantage, too; it is beamed directly into vehicles where drivers and pedestrians can hear it. Sort of a "point of sale" message, as it were.

Radio and television stations alike are carrying as regular shows a great deal of traffic material these days; weather information, safety messages, warnings on road detours, and so on. This is the kind of public service they like because it is information in which nearly everybody is greatly interested. When you have something of particular interest in the traffic engineering field, find out the name of the producer of one of those shows, get in touch with him and offer your information and help.

I have not found time to say anything about speakers' bureaus, special exhibits, or demonstration runs in traffic. These and other activities provide added opportunities from time to time for disseminating facts to the public. Perhaps if we have time during the discussion period some of these items can be developed.

In concluding, however, I want to go back to my first statement, because it is the most important opinion I can offer you. A recognition by the top administrator of his personal responsibility for public information is the key to selling the traffic program. Everything worthwhile must begin there; everything else flows from that first essential step. Government is, in the final analysis, organized public opinion, and part of the day-to-day duty of the public officer is to supply the facts so that public opinion can be soundly based.

URBAN TRANSIT

(Continued from page 16)

weekday. What other transportation facility can make that statement?

Answer: The New York City Transit Authority could make such a statement if it wished. . . . The Lexington Avenue subway in New York carries far more persons than that on a typical weekday. Some 545,000 persons move over this facility *past the maximum load point ALONE*, not to speak of the thousands of others who use the route in movements which do not bring them past this important "maximum" point of transit schedule design. . . . The Seventh Avenue subway in New York and its counterpart on Eighth Avenue develop quite similar, though perhaps slightly lower, volumes of passenger movement.

So, we will pose a final question for the questioner: "If freeways are the 'hands-down' answer in Los Angeles, why is the Los Angeles Metropolitan Transit Authority spending millions of public dollars in investigation of, and planning for, a rapid transit system for that metropolis?"

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Financing and Administration of Community Parking Programs

By James B. Saag
Traffic Engineer
De Leuw, Cather & Company
Consulting Engineers

THE SUBJECT, "Financing and Administration of Community Parking Programs," would appear at first glance to be more appropriate for a group of bankers and business administrators than for traffic engineers. Many traffic engineers, however, are finding their attention taken up as much by parking problems as by signal timing, channelization and other of the more technical aspects of our profession. Solution of the parking problem calls for money, and those who have money to lend want assurance that parking lots and garages in which they invest are economically sound ventures, and that they will be properly managed. These investors look to traffic engineers like yourselves as experts on such matters.

Lack of parking space has been blamed for many community problems including congestion, decentralization, deterioration, loss of tax revenue, and even ulcers. The traffic engineer is blamed, in turn, since the public is inclined to think that the person responsible for moving traffic on the street should also be responsible for moving it off of the street.

The subjects discussed herein—financing and administration of parking programs—are two areas of this relatively new activity with which traffic engineers are becoming closely connected. The purpose will be to outline various methods of financing and administrating municipal parking programs as well as to review briefly current developments in the field.

The prerequisite to a parking program for any city is the determination through established traffic engineering methods of a deficiency in the existing supply of parking spaces. In many instances, the severity of a parking problem has been exaggerated by overzealous merchants and civic organizations. An engineering survey should be made by someone with an objective viewpoint, therefore, as well as the proper training and experience. This may be a local or state agency, or a consultant. The survey determines the nature and scope of the problem before the community plunges into an off-street parking program. It is often possible to correct minor deficiencies through such simple devices as revision of curb parking regulations.

In many American cities—particularly in older sections of the country—established business districts have begun to deteriorate in the wake of decentralization. Since a large portion of the city's tax base is usually concentrated in its central business district, the revitalization of this area is an important responsibility of the municipal government. Except in rare instances, however, additional parking facilities alone will not bring about this rebirth. A comprehensive program should be developed, therefore, including improvement of traffic facilities, public transit and general appearance of the area as well as provision of an adequate supply of parking space.

Financing

Having determined the nature and scope of the problem and developed the parking requirements of a particular area, the next step is to estimate the cost of a satisfactory solution. Finally, the unpopular question—how will the cost be met?—must be squarely and honestly faced.

To the individual driver, the question is simple. Is he going to have to pay for parking his car, or is someone else going to pick up the tab (and pass the cost on to him in some hidden and painless way)? The answer is important and closely related to the overall success of a parking program. Numerous articles, pamphlets and books have been written on such subjects as park-and-shop; park-and-ride; merchant validation; and other means of shuffling parking costs until they seem to disappear. It would be overly ambitious, therefore, to attempt to cover the subject, even briefly, in a paper of this length.

The question of who is going to pay for parking facilities, when faced by a city administration, takes on an altogether different meaning. No amount of legerdemain will make it seem less real. It demands to know to what extent if any, municipal funds and resources are to be obligated for off-street parking. It asks whether private enterprise can be encouraged to provide the needed facilities or whether some governmental agency must find funds for this purpose. Finally, it asks what is the best method of public financing or assistance, if such is required.

The provision of off-street parking facilities by private investors is the oldest and still the most general method of financing. The National Parking Association cites figures from the U.S. Chamber of Commerce showing that 94 per cent of all off-street parking facilities in the United States today were paid for by the four and three-quarter billion dollars invested by private enterprise. The remaining six per cent of such facilities were municipally financed.

The three basic sources of funds to finance new parking facilities—private investors, local government or a combination — should be analyzed with

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consideration of local conditions to determine which best meets the requirements in each situation.

Financing by Private Investors

Americans are justly proud of the system of providing for our needs through competitive free enterprise. Private entrepreneurs were certainly well established in the parking industry long before governmental agencies entered the field. Although the legality of governmental action or regulation in the interests of the public at large has been generally accepted, private developers should be encouraged to the fullest extent. Established garage operators with many years of experience are usually far better equipped to provide the needed facilities than a public agency new in the field. Private enterprise is also usually more efficient in endeavors of this type than a governmental body. In most instances, public action in the field of off-street parking should be a last resort utilized only when it has been shown that private enterprise is unable or unwilling to do the job.

Although provision of additional off-street parking space by private developers usually follows the law of supply and demand, individuals naturally tend to be conservative when considering investment of large sums of money in a new facility. In many cases, therefore, when demand is increasing at a rapid pace, supply lags behind. This has been the main factor in decisions involving municipal action in the field of off-street parking.

There are many ways in which the local government can encourage private investment in off-street parking facility. The Motor Vehicle Parking Agency in the District of Columbia, for example, has made data obtained from parking surveys available to private operators for use in planning new facilities. Urban renewal programs also afford the opportunity to assist private parking developers in acquiring suitable sites which, otherwise, would be prohibitively expensive. In St. Louis, Missouri, approximately 2,400 off-street parking spaces are proposed to be built in conjunction with three large apartment buildings in a downtown renewal area. The spaces, to be available to workers and visitors in the area as well as to tenants, will be financed by private investors.

There are other situations, however, wherein the powers or resources of public agencies are required to accomplish a particular project. The use of eminent domain is sometimes the only feasible way in which to assemble a site required for parking. In addition, construction of parking facilities beneath public parks or squares is often possible only if done by the local government. Even in these situations, the desired result can usually be achieved through the combined effort of governmental agencies and private developers.

Development of off-street parking facilities by private interests also includes, of course, provision of customer, private and employee parking spaces by individual merchants or property owners. Many facilities of this type have been built in conformance with zoning requirements. Although most up-to-date zoning ordinances require provision of a specified number of off-street parking spaces in conjunction with various types of new development, the requirement is often inadequate to meet peak demands. In addition, zoning regulations are not retroactive and have very little effect in older business districts where the parking problem is most acute.

It is noteworthy that most of the largest customer parking facilities have been provided by stores which are part of a nationwide organization. The large chains have been able to devote considerable effort toward research of their individual problems, and are well aware of the importance of providing adequate parking space. Smaller merchants are often reluctant to invest comparatively large sums for parking facilities in the face of declining sales.

Since most small merchants belong to local associations or businessmen's clubs, there has been a great deal of activity in forming cooperatives or private corporations to finance and operate new parking facilities. In many instances these have been extremely successful—in other cases, dismal failures. The main difficulties lie in organizing a large group for such a purpose and in obtaining the required capital funds. Differences of opinion concerning fair distribution of the cost, management of the completed facilities and payment of operating expenses often spell the doom of such programs. Once the initial hurdles have been cleared, however, there are many advantages to this type of financing. Parking is usually free, thus helping the area served to remain competitive with outlying shopping centers. In addition, since the merchants and businessmen are acutely aware of their specific local problems, the completed facilities are usually well planned and appropriately located. The main advantage of cooperative parking programs, of course, is that no municipal funds are required and there is no public responsibility.

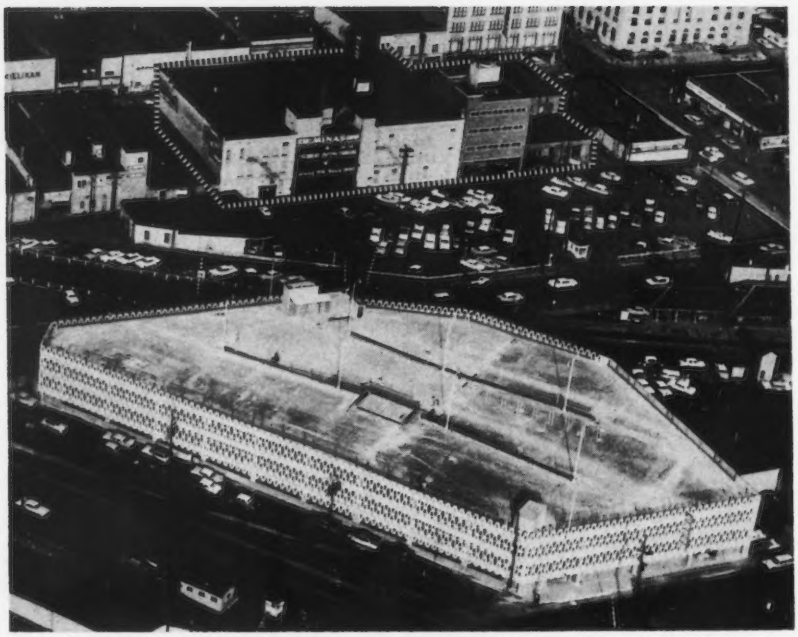
Financing by Municipal Government

Municipal governments have taken the initiative, in many instances, to provide financing for needed parking facilities. These programs have included the forthright use of public funds, as well as the use of municipal borrowing powers.

Little need be said about the use of general funds to finance parking facilities. Since most communities operate within tightly planned budgets, it is unusual if surplus funds are available in sufficient quantity for such purposes. When they are, however, the procedure is simple and the desired result is achieved in the least possible time. The use of general funds to finance off-street parking has been limited, for the most part, to facilities built in conjunction with municipal offices or other public buildings.

Use of municipal borrowing power has been the most popular method of governmental financing as related to off-street parking facilities. This has been accomplished, in most cases, through sale of either revenue or general obligation bonds. The full faith and credit of the municipality is pledged toward repayment of principal and interest on general obligation bonds. Revenue bonds are payable both as to interest and principal solely from the net income derived from certain specified sources. The principal source of income is usually the facilities constructed with the bond proceeds, but income from curb parking meters has also been pledged in revenue bond financing to make the offering more attractive.

The main advantage of financing through use of general obligation bonds is the low interest rate usually obtained. There are further savings in financing cost and in interest during construction. Financing through sale of general obligation bonds, however, is often restricted by statutory limitations on the total amount a municipality can borrow. Officials are often reluctant to approve borrowing for off-



Aerial view of a new 562-space parking garage constructed by the Triangle Parking Corporation for the Minas Department Store, Hammond, Indiana. Note the relationship between the size of the garage and the department store (dashed line). Many merchants have found that more space is required for parking than for retail sales.

street parking facilities if other projects might be jeopardized. Several states (notably New York and Ohio) have recently enacted legislation, therefore, permitting the sale of these bonds outside of the municipal debt limitation, so long as net revenue is adequate to cover interest and amortization charges.

Revenue bonds supported entirely by net income from operation of the completed parking facilities have no direct effect on the debt-contracting powers of the municipality. Requirements for debt service coverage and higher interest rates, however, often preclude use of revenue bond financing except for the most lucrative facilities. It is usually required that net revenues provide a minimum coverage of 1.5 times interest and amortization charges. In addition, it is usually necessary to capitalize interest, not only for the construction period, but for the first year or two of operation. Many of these obstacles can be overcome and the offering made more attractive if revenue from existing parking facilities—curb or off-street—can be pledged for added surety.

The scope of parking programs financed through revenue bond issues has varied widely. The range extends from the largest, the City of Chicago, where $41,000,000 in parking revenue bonds have been sold, to Coffeyville, Kansas, where the total issue amounted to $20,000.

The City of Chicago program is unique in that it provided for financing of off-street parking facilities in older neighborhood shopping areas as well as the central business district. Net revenue from curb parking meters was also pledged toward support of the bond issue. Although the downtown facilities have proved self-supporting, very few neighborhood lots produce sufficient revenue to cover debt service charges. Through pooling of revenue from the entire parking program, however, it has been possible to provide these much needed facilities in outlying areas which, otherwise, would be seriously affected by competition from modern shopping centers.

The main advantage of financing through revenue bonds rather than general obligation bonds is the relief from public responsibility which the former afford. General obligation bonds, including even those sold in states which provide for their sale outside of the debt limitations, can seriously impair the bonding power of the municipality if revenues fall short of interest and amortization charges.

Both types of bonds offer an efficient and speedy method of municipal financing. Their use has been extremely popular, since they offer a pay-as-you-go method of financing which is easily understood by the public.

Combinations of Private and Governmental Action

Methods of financing off-street parking programs through use of either private or public funds have been described briefly in the preceding sections. There are several combinations of these methods which have also been applied.

The "Baltimore" plan is a noteworthy example of cooperation between a governmental body and private investors to finance much needed parking facilities. Under this system, inaugurated in Baltimore in 1948, private investors furnish approximately 20 per cent of the amount required to construct new parking garages. The city government lends the remainder at low interest rates. The public's portion of the investment is derived from the sale of municipal certificates of indebtedness, secured by a first mortgage on the completed facilities. This unique method of financing, which offers investors funds at sometimes one-half of the current interest rate for private borrowers, has been exceptionally successful in encouraging construction of downtown parking facilities.

The use of special assessments in financing off-street parking programs has also been widely applied throughout the United States. This method affords local property owners the use of governmental powers of eminent domain, while not requiring the direct expenditure of public funds. Assessments against individual property owners are usually proportionate to the estimated benefits anticipated from the completed facilities. In general, the size and type of business as well as distance from the proposed parking development are the controlling factors in estimating benefits. Many states also stipulate that property owners who have already provided off-street parking facilities as well as owners of residential property are not subject to assessment.

The main obstacle to assessment district financing is absentee ownership of commercial property. While merchants and businessmen often realize the importance and value of adequate parking facilities, the owners of property leased for these purposes are not so easily convinced. Unless the assessment can be passed on directly to the

tenants in the form of increased rentals, property owners have difficulty in visualizing the long-term benefits.

Lease of sub-surface rights in public areas has also been widely used. A notable example is Pittsburgh's Mellon Square Garage where sub-surface rights were leased to the developer for a period of 38 years. Mellon Square Garage, Inc., paid the entire cost of constructing the 890-space underground garage while development of the park above was financed from other sources. Upon expiration of the lease, the parking garage will be turned back to the Pittsburgh Parking Authority.

The City of Baltimore is considering sale of sub-surface rights below pedestrian parks and plazas in the 22-acre Charles Center downtown redevelopment area. It is expected that the value of these development rights will be computed on the basis of the re-use value of the properties acquired with a proportionate amount assigned to both the surface and sub-surface development.

The many variations in methods of financing clearly indicate that no single formula can be developed which will satisfy every need. Much depends on the scope of the project as well as its revenue producing capabilities. In addition, such items as state and local legislation, prevailing interest rates, municipal credit ratings, and projections of future development must be thoroughly investigated.

Administration

Administration of community parking programs has been assigned, in many instances, to the realm of the traffic engineer. The scope and nature of the assignment depends to a great extent on whether the municipality, itself is the owner or operator of off-street parking facilities.

Even in communities where all off-street parking facilities are privately owned or operated, the municipal government has an administrative responsibility. Regulations are required to assure that lots and garages do not become eyesores. Other important considerations include the locations and widths of driveways and the ability of these facilities to receive and discharge their patrons without causing undue traffic congestion on the neighboring streets. In addition, the public must be protected against unfair operating practices. Among several ordinance requirements should be the conspicuous posting of rate schedules at all off-street parking facilities available to the general public.

Municipal officials should also cooperate with parking operators in striving toward a mutually desirable goal. In many small and medium sized communities, particularly in the eastern United States, a blue and white sign with the letter "P" shows the way to the nearest off-street parking facility. Directional signs of this type assist in reducing cruising and assist each operator in attracting patrons to his facility.

If the city is in the parking business, the administrative problems can become extremely complex. Many states have passed legislation, therefore, authorizing the creation of a special purpose public corporation or parking authority to administer such programs. Much has been said for and against parking authorities. Proponents of authorities stress their businesslike nature and the proven capacity of such agencies to move ahead rapidly on large programs. Opponents claim the parking authority is a duplication of governmental functions in a field where close cooperation between various city departments must be maintained. Whether or not the formation of a parking authority is advantageous or applicable depends on local conditions and laws. Its possibilities should not be overlooked, however, in the initial stages of planning.

Many municipalities have found it advantageous to disassociate themselves from the operation of municipally-owned off-street parking facilities. The simplest means of achieving this is to lease the facility to a private operator. The city then assumes the functions of a landlord and leaves operation to the lessee, retaining control in widely varying degree.

If the government desires to maintain a certain amount of control over the operation and still not assume the day-to-day functions of operation, the management contract or agreement is a logical tool. Through use of a management agreement, a municipality can retain control of rates, maintenance, promotion and other related items while full benefit is derived from the services of an experienced parking operator.

The method of payment stipulated in management agreements also varies widely. A common form specifies that the operator will receive a percentage of the gross revenue from parking. The City of Chicago has entered into numerous such agreements in its parking program. Initially, the operators were paid a small percentage of gross revenue for management alone, and reimbursed directly for expenses of maintenance and operation. After use of the facilities stabilized, the city found it advantageous to increase the operator's percentage to an amount sufficient to cover both the management fee and expenses. The city was thereby relieved of the burdensome task of auditing the many separate items of expense which accrued each month.

Management agreements which stipulate a percentage of gross revenue to the operator in addition to reimbursement for expenses have been used with remarkable success. There is one serious drawback, however, to this type of agreement. It offers the operator very little incentive to reduce the operating expenses and thereby increase the return to the city. For this reason, the City of Cincinnati developed an unique arrangement involving both a management fee and incentive fee.

The Cincinnati agreements specify payment to the operator of a fixed annual amount for management services. These include supervision (except for the working-manager of the garage), bookkeeping, promotion and various items of insurance. The operator is also reimbursed for direct expenses and paid an additional incentive fee based on net revenue. The contract amounts have been adjusted, insofar as possible, so that the management fee covers only the operator's expense and overhead while his profit, if any, is a function of the incentive fee.

The method through which off-street parking facilities are operated will also depend on type of control. The trend toward automation in off-street parking facilities is being spurred on by rising labor costs. Only a decade ago almost all parking lots and garages were operated through use of attendants. In recent years, however, most new garages have been designed for self-parking. It has usually been found that the savings in labor expenses more than offset the investment in additional floor space.

Increased use of self-parking has encouraged the development of numerous electronic devices, including auto-

(Continued on page 27)

World Traffic Engineering Conference

Combining the 31st Annual Meeting of the
Institute of Traffic Engineers and
International Sessions in Traffic Engineering
SHERATON-PARK HOTEL
Washington, D.C., U.S.A.

August 21 to 26, 1961

PRELIMINARY PROGRAM

Annual Meeting of the Institute of Traffic Engineers

Monday, August 21, 1961

10 A.M. — OPENING SESSION
President A. F. Malo, *chairman*

After a welcome to the District of Columbia by General Frederick J. Clarke, Engineer-Commissioner of the D. C. government, the Institute will present the Past Presidents' Award and the Matson Fund Board of Award will present the Theodore M. Matson Memorial Award. The award winners will each present a paper.

NOON — KEYNOTE LUNCHEON
Luncheon Address: The Urban Problem—
Now and Future

2:15 P.M. — TECHNICAL SESSION
Robert A. Burch, *chairman*

The theme of this session is "Objectives in Metropolitan Area Development." The subject will be discussed by a panel, including: William E. Finley, Director, National Capital Planning Commission, Washington; Philip G. Hammer, President, Hammer & Co. & Assoc., Atlanta, Ga.; Sidney H. Woolner, Community Facilities Administration, Housing & Home Finance Agency, Washington; Howard F. McCloy, Director, Real Estate, U. S. Steel Corp., Pittsburgh, Pa.

Tuesday, August 22, 1961

9 A.M. — DEPARTMENTAL SESSION
Sam Cass, *chairman*

The theme of this session is "Application of Devices," with two papers and a panel.

"Role of Pedestrian Control in Traffic Regulation"—
S. T. Siegel, City Traffic Engineer, Indianapolis, Ind.

"Radio Frequency Needs—Now and Future"—
Charles R. Sullivan, Chief, Traffic Planning Section, D. C. Department of Highways and Traffic

"Traffic Engineering in Small Cities"—a panel discussion
Daniel J. Hanson, Traffic Commissioner, St. Louis County; Robert A. McNeil, Traffic Engineer, Peoria, Ill.; Robert A. Mitchell, Traffic Engineer, Wilmington, Del.; Allen T. Hayes, Traffic Engineer, Lansing, Mich.; Herman J. Hoose, Traffic Engineer, Charlotte, N. C.

9 A.M. — DEPARTMENTAL SESSION
C. J. Keese, *chairman*

The theme of this session is "Design and Operations" and it will include two papers and a panel.

"The Three-Level Diamond Interchange"—Cooper McEachern, Traffic Engineer, Houston, Texas

"Geometrics of Local and Collector Streets"—
Harold Marks, Traffic Planning Engineer, Los Angeles County Road Dept.

"Freeway Ramp Terminal Design"—a panel discussion
D. W. Loutzenheiser, Bureau of Public Roads; Charles Pinnell, Assistant Research Engineer, Texas Transportation Institute; George A. Hill, District Engineer, California Division of Highways; F. B. Crandall, Traffic Engineer, Oregon State Highway Commission.

2 P.M. — ANNUAL BUSINESS MEETING

This is the annual business session for Institute members. For non-members, an opportunity will be offered to see some of the points of technical interest in the vicinity of Washington.

Wednesday, August 23, 1961

9 A.M.—TECHNICAL COMMITTEE MEETINGS

During the morning, the numerous technical committees of the Institute will schedule meetings. These are open meetings, in general, and non-members of the committees are invited to sit in on the meetings.

2 P.M. — DEPARTMENTAL SESSION
Donald S. Berry, *chairman*

This session has the theme "Planning and Administration" and will include two papers and a panel.

"Duties of the Traffic Engineer in the Smaller City—
Douglas J. Carmody, Director, Traffic & Parking, Mo-

desto, Calif. Discussion by Joseph C. Oppenlander, University of Illinois.

"About 20 Minutes" — Robert S. Holmes, Highway Traffic Products Committee.

"The Transportation Planning Team"—a panel discussion, with representatives from several levels of government

2 P.M.—DEPARTMENTAL SESSIONS

Marble J. Hensley, *chairman*

This session is devoted to "Equipment and Materials" and will include a panel and three papers.

"Electroluminescent and Other Sign Materials"—(speaker to be announced)

"Traffic Signal Colors and Lamps"—a panel discussion. C. S. Michalski, Chicago Citizens' Traffic Safety Board, John P. Hoxie, Corning Glass Works, William H. Mann, Traffic Engineer, Nashville, Tenn.

"Recent Changes in the Uniform Vehicle Code in Lighting—

W. L. Groth, Director of Public Safety, Richmond, Va.

"Vehicular Signal Systems"—Burton W. Marsh, American Automobile Association, Washington, D. C.

International Sessions in Traffic Engineering

Thursday, August 24, 1961

9 A.M. — OPENING SESSIONS

President A. F. Malo, *chairman*

Delegates will be welcomed by leading U. S. government officials and by spokesmen for the sponsors, i.e., the Institute of Traffic Engineers, the Permanent International Association of Road Congresses, the World Touring and Automobile Organization and the International Road Federation. Recognition will be given also to representatives of the Organization of American States and other major groups participating in the Conference.

10 A.M. — THEME I — THE NEED FOR SCIENTIFIC RESEARCH IN TRAFFIC ENGINEERING AND THE DESIRABILITY OF INTERNATIONAL COOPERATION IN PROMOTING IT

Here will be highlighted an important focal subject of the International Sessions. Based on reports from outstanding research authorities from all over the globe, a delegate from Great Britain will sum up the values of and prospects for intensive international effort on traffic engineering research.

Reports: Canada—Professor H. M. Edwards, Associate Professor of Civil Engineering, Queen's University, Kingston, Ontario

Germany—Professor J. Schlums, Technische Hochschule, Hanover

Sweden—Mr. Nils G. Bruzelius, Head, Swedish Research Organization

USA—Mr. Fred W. Hurd, Director, Bureau of Highway Traffic, Yale University.

General Reporter: Great Britain—Sir W. H. Glanville, Director, Road Research Laboratory

Chairman: France—Mr. A. Rumpler, Executive Director, International Road Federation, Paris

2 P.M.—THEME II—URBAN TRANSPORTATION AND ITS FUTURE

Adequate transportation is a basic need of the world's fast-growing metropolitan community. The evolving solutions leading to enrichment of the full urban life rather than to its impairment are here discussed by an eminent American engineer, assisted by a panel of international experts.

Panel: Brazil—Mr. Luiz Ribeiro Soares, Chief of Mass Transit Planning for city of Rio de Janeiro

France—Mr. J. Elkouby, Roads and Bridges Engineer, Ministry of Public Works

Germany—Professor B. Wehner
Technische Hochschule, Berlin

Switzerland—Mr. Aregger and Mr. M. Jenni, Traffic Engineer, Zurich

USA—Mr. J. Douglas Carroll, Jr., Director, Chicago Area Transportation Study

USA—Mr. Frank W. Herring, Deputy Director, Comprehensive Planning, Port of New York Authority

USA—Mr. D. Grant Mickle, Director, Traffic Engineering Division, Automotive Safety Foundation

USA—Mr. Don C. Wagner, Managing Director, City Hall, Philadelphia

General Reporter: USA—Mr. Edward H. Holmes, Assistant Commissioner for Research, U. S. Bureau of Public Roads

Chairman: Great Britain—Mr. J. F. A. Baker, Chief Engineer(Highways) Ministry of Transport

Friday, August 25, 1961

9 A.M. — THEME III — DESIGN OF INTERCHANGES ON RURAL FREEWAYS

The complexities of freeway design reach their zenith in the myriad details of the modern interchange. The enlightened experience of top specialists in both hemispheres serves as the backdrop for this discussion, which will be guided by a highly respected authority from the United States.

Reports: Australia—Mr. Henry George, Divisional Engineer, Country Roads Board, Victoria

Belgium—Mr. E. M. Goelen, Roads and Bridges Engineer, Ministry of Public Works

France—Mr. Thiebault, Head, Motorway Planning Service

Germany—Mr. F. Heller, Counsellor, Ministry of Transport, Bonn

Japan—Dr. Hiromasa Sato, Japan Highway Public Corporation, Tokyo

Mexico—Mr. Raphael Cal y Mayor, Mexican Road Association

South America—to be announced

United Kingdom—Mr. J. G. Smith, Ministry of Transport

USA—Mr. William A. Bugge, Director of Highways, Washington State Highway Commission.

USA—Mr. George A. Hill, District Engineer, California Division of Highways.

General Reporter: USA—Mr. Charles M. Noble, Consulting Engineer, Princeton, New Jersey (formerly Chief Engineer, New Jersey Turnpike)

Chairman: Peru—Mr. Hermann Baumann, President, Peruvian Highway Association

2 P.M.—THEME IV—RESEARCH INTO HIGHWAY TRAFFIC ACCIDENTS

A breakthrough to a new understanding of traffic accidents, based on penetrating analysis of environmental and human factors, is the responsible guide to the future engineering of safe highway transportation.

Panel: Belgium—Mr. P. Lefevre, Chief Roads & Bridges Engineer, Ministry of Public Works and Reconstruction

France—Mr. Serge Goldberg, Ingenieur des Ponts et Chaussees, Ministry of Public Works

Great Britain—Dr. R. J. Smeed, Deputy Director, Road Research Laboratory

USA—Mr. Karl Moskowitz, Assistant Traffic Engineer, California Division of Highways

General Reporter: France—Mr. Roger Coquand, Director of Roads and Road Traffic, Ministry of Public Works

Chairman: USA—Mr. Charles W. Prisk, Special Assistant, Office of Research, U. S. Bureau of Public Roads

Saturday, August 26, 1961

9 A.M.—THEME V—USE OF ELECTRONICS IN TRAFFIC CONTROL

Advances in the control of traffic, either en masse or as individual vehicles, drivers and pedestrians, are currently marked by skillful and imaginative applications of electronics. Delegates will hear a report of broad international value in this session.

Reports: France—To be nominated

Germany—Dr. Gerhard Littmann, Chief of Police, Frankfurt

Great Britain—Mr. J. G. Wardrop, Road Research Laboratory

India—Mr. Khan Saheb S.M.A. Pathan, Traffic Control Department, Bombay

Italy—Dr. Giovanni Ernico Eugenio Vacca, University of Rome

USA—Mr. Daniel L. Gerlough, Senior Staff Engineer, Ramo Wooldridge Incorporated

USA—Mr. O. K. Normann, Deputy Assistant Commissioner for Research, U. S. Bureau of Public Roads

General Reporter: USA—Mr. Henry A. Barnes, Commissioner, Department of Transit and Traffic, Baltimore, Maryland

Chairman: Belgium—Mr. H. Hondermarcq, Director-General of Roads, Ministry of Public Roads

2 P.M.—THEME VI—FREEWAY OPERATION

New highway design is inevitably followed by new operating problems. First-hand experience with freeway operation has special significance not alone for traffic and design engineers, but for street and highway administrators, and others as well. A panel of highly competent international authorities, led by a knowledgeable Canadian traffic engineering official, will compare the lessons of experience on a world-wide basis.

Panel: Germany—Mr. F. Rickenberg, Oberregierungs—und baurat, Celle

Italy—Ing. Antonino Berti, Director, Technical Office, Province of Milan, Director General of the Autostrada Serrovalle-Milan

Netherlands—To be nominated

USA—Mr. Edmund R. Ricker, Chief, Traffic Engineering Bureau, Pennsylvania Department of Highways

General Reporter: Canada—Mr. K. Vaughan-Birch, Director, Traffic Division, Engineering Department, City of Vancouver

Chairman: Italy—Professor C. Chiodi, President, Touring Club Italiano

Study Tour by Bus

Following the World Traffic Engineering Conference, a six-day (August 28-September 2) *Study Tour* will be conducted, by bus, for the purpose of inspecting important highway and traffic improvement projects in the northeast United States. It will include stops in Baltimore, Philadelphia, Trenton, New York City, and New Haven.

Inter-American Traffic Seminar

The Organization of American States—Pan American Union will conduct an *Inter-American Traffic Seminar*, for traffic specialists from countries of the Americas, timed in conjunction with the Conference. The Seminar sessions will be held at the Pan American Union in Washington, D. C., September 4-8.

(Continued from page 23)

matic ticket issuing machines; vehicle detection systems to actuate signs and control traffic within the garage; and a completely automatic cashiering system. The latter is in an advanced stage of development and should be available in the near future.

Parking meters installed at individual car spaces within a lot or garage have also been effectively used in municipal operation. These are particularly applicable in facilities with numerous entrances and exits which would each require an attendant or automatic device for satisfactory control. Public acceptance of metered facilities can be obtained most readily if courtesy envelopes are issued to violators in lieu of parking citations. The courtesy envelopes should also specify a slight penalty for overtime parking to insure against wholesale violation of time limits.

It is not possible within the scope of this paper to cover in detail the many other items of administration the traffic engineer will face upon inauguration of a new community parking program. Several of these—rate schedules, insurance and promotion of use at each completed facility—are important and should be investigated in detail.

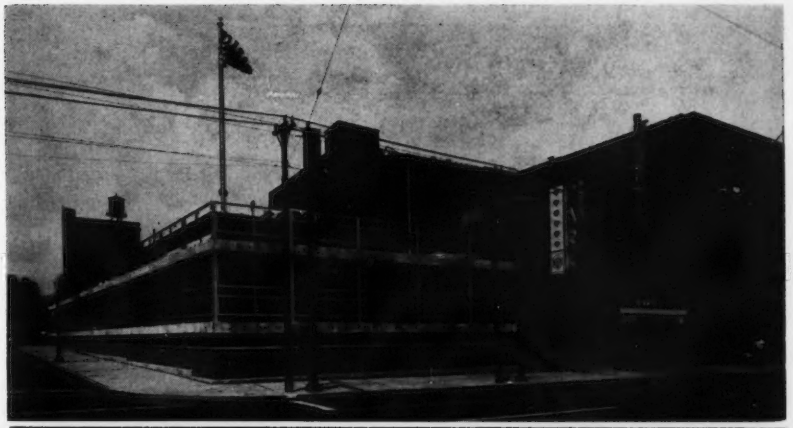
Much can be learned from the successful innovations as well as from the mistakes of others in the field of administration of community parking programs. It would be worthwhile for the traffic engineer and other city officials embarking on such a program to visit cities with experience along these lines and learn, at first hand, the methods which have proved most successful.

In conclusion, the answers to questions concerning financing and administration of parking programs will not be found in engineering handbooks. It would require a loose-leaf book, as a matter of fact, to keep a manual current in this rapidly growing field. Through application of sound management techniques, however, as well as through experience gained from others, a parking program can be developed which will function efficiently to satisfy the needs imposed by any given set of circumstances.

"Since I got my new car I don't have to walk to the bank with my deposits."

"Drive over now, eh?"

"No, I just don't make any."



Cincinnati's Seventh Street Municipal Garage financed through sale of revenue bonds. This garage is operated successfully through use of parking meters (arrow) at each of the 260 spaces. Parking meters provided the only feasible means of control due to numerous entrances and exits dictated by narrow site limitations.

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M.I.T. Short Course in Advanced Highway Engineering

Advanced concepts and techniques for the treatment of highway planning and design problems will be the subject of a one-week Special Summer Program in *Advanced Highway Engineering* to be held at the Massachusetts Institute of Technology from Monday, August 14, through Friday, August 18, as part of the 1961 Summer Session.

The lectures and discussions in this program will draw heavily upon the results of research in highway design now underway at M.I.T. and elsewhere. The major topics to be considered include:

The framework for analysis of alternatives in highway design.

Analytical and simulation techniques for the determination of vehicle performance.

Determination of unit and total highway user costs.

Traffic estimation and assignment techniques.

Engineering systems for determination of quantities and costs of alternate highway alignments.

Criteria for economic evaluation of highway designs.

Characteristics of highway engineering decision problems.

Data collection and the use of sampling techniques.

Effect of additional engineering on quality of highway design.

The program is intended for practicing highway engineers and planners, as well as for those engaged in teaching and research on highway engineering problems.

Lectures will be conducted by Professor A. S. Lang and Professor Martin Wohl of the Transportation Engineering Division and by Professor P. O. Roberts of the Data Engineering Division. Mr. John Clarkeson of The Clarkeson Engineering Company, Inc., will participate as a guest lecturer. The program is under the general direction of Professor A. J. Bone of the Transportation Engineering Division of the Department of Civil and Sanitary Engineering.

Inquiries regarding admissions, tuition and other details should be made to the Director of the Summer Session, M.I.T.

Forty-four Complete Northwestern TE Seminar

Forty-four municipal, state, and industrial traffic engineers and planners from the United States, Canada, and Iran completed the three-week Traffic Engineering Seminar March 24, 1961, at the Traffic Institute, Northwestern University, Evanston, Illinois.

The course covered three major study areas:

1. Methods of Research and Analysis—The most useful procedures for obtaining and using basic data about the current street and highway situation, including volume counts, origin-destination studies, parking studies, and accident analysis.

2. Regulation and Control Techniques—Making the best use of existing facilities by employing tested traffic operating techniques such as one-way traffic systems, unbalanced laning, and curb-parking regulations.

3. Planning for Future Growth—The elements of city planning, highway planning and design, planning for public transit, design of parking facilities, and impact of limited-access roads on communities. Some topics were Design Standards and Programming, Geometric Design of Streets and Highways, and Financing Parking Facilities.

"The Traffic Engineering Seminar was offered to help meet the need for trained traffic engineers in cities, counties, and states," said Bernard R. Caldwell, director of the Traffic Institute. "The seminar was designed to broaden the experience of personnel now performing traffic engineering functions and to teach fundamentals to new engineering staff men."

Row 1: Jean Keneipp, Bernard R. Caldwell; row 2: Eiichi Tanaka, W. Bedford Parrish, Phillip M. Chiaramonte, Charles L. Fogelson, Alinaghi Bigdeli, George R. Jivatode, Henry E. Wood, Rogers E. Williams, Peter R. Collings; row 3: Ronald M. Parkinson, Frank E. Trendell, Barkev Karnig, Alexander T. Morris, Hale W. Sherrell, Charles L. Willis, John C. Higinbotham, Donald M. Meisner, George Gundersen; row 4: Max L. Whitman, Norman J. Toberman, John P. Cavallero, Rowell E. Paine, Ross Knight, Miles L. Fuller, Walter Goodgion, W. E. Gillespie, Daniel Y. Gibson; row 5: Russell J. Reinig, John C. Myatt, Edward C. Bather, John W. Clark, Ross J. Walker, Don Eure, William A. Stewart, Louis M. Robinson; row 6: Rudolph W. Abraham, George W. Easley, Joseph M. Thomas, Edwin Anderson, William C. Scruggs, Leslie F. Waldron, George A. Dale, David A. Vallis.

Accident Records Film Produced at Michigan State

A new 20-minute, 16 mm., sound color film showing how a good traffic accident records system benefits a traffic safety program has been produced by Michigan State University.

The film demonstrates simple techniques and materials for keeping, interpreting, and presenting vital traffic records information. It stresses the importance of records in enforcement, engineering, and public education, and is designed for showing to traffic engineers, police officers, administrative officials and public support groups.

Produced by the Highway Traffic Safety Center at the University, the film is available from the Audio-Visual Center, Michigan State University, East Lansing, Michigan. Sale price is $200.00. Prints are available for preview upon request.

(Continued on page 36)

World Traffic Engineering Conference

An Invitation

All interested persons everywhere are cordially invited to attend the first World Traffic Engineering Conference, to be held in Washington during the week of August 21 through August 26, 1961.

The Conference will consist of two valuable meetings:

THE 31ST ANNUAL MEETING OF THE
INSTITUTE OF TRAFFIC ENGINEERS
August 21, 22 and 23

INTERNATIONAL SESSIONS IN TRAFFIC ENGINEERING
August 24, 25 and 26

The Institute of Traffic Engineers has its headquarters in Washington. It has members in many countries.

The International Sessions in Traffic Engineering are being planned jointly by the World Touring and Automobile Organization, the Permanent International Association of Road Congresses, the International Road Federation and the Institute.

In addition to these sponsors, many governmental agencies and private organizations are cooperating in arrangements for the Conference, including the International Cooperation Administration, of the U. S. Government, and the Organization of American States—Pan American Union.

The Local Planning Committee in Washington in charge of program and arrangements consists of 105 individuals representing many agencies and organizations. Conference headquarters will be the Sheraton-Park Hotel.

Study Tour (by bus)

Following the World Traffic Engineering Conference, a six-day (August 28-September 2) *Study Tour* will be conducted, by bus, for the purpose of inspecting important highway and traffic improvement projects in the northeast United States. It will include stops in Baltimore, Trenton, Philadelphia, New York City, and New Haven.

Associated Activities

The Organization of American States—Pan American Union will conduct an *Inter-American Traffic Seminar,* for traffic specialists from countries of the Americas, timed in conjunction with the Conference. The Seminar sessions will be held at the Pan American Union in Washington, D.C., September 4-8.

In addition to the above events, the International Cooperation Administration intends to hold a one-week pre-Conference orientation meeting and a short training course for ICA Conference participants if sufficient interest is indicated by countries with which the ICA has contractural relationships for technical training.

An Outstanding Program

The technical program for the ITE Annual Meeting has been developed by the Institute's Committee on Technical Sessions, and is fully coordinated with the International Sessions which will follow.

The technical program for the International Sessions has been developed jointly by the Institute and a subcommittee of the OTA/PIARC/IFR committee—which previously has organized and conducted five Study Weeks in Traffic Engineering in other countries over an eight-year period.

A copy of the preliminary program of the World Traffic Engineering Conference appears in this issue. It is hoped and expected that a majority of those in attendance at either meeting will plan to attend the full six days.

ADVANCE REGISTRATION
WORLD TRAFFIC ENGINEERING CONFERENCE
Washington, D. C.

August 21-26, 1961

31st Annual Meeting
Institute of Traffic Engineers (ITE)

International Sessions in Traffic Engineering

Please mail this card by June 15 so that we may send you advance copies of the papers in your preferred language, and make reservations for you on the study tour or meal events for which space will be limited.

This is not a commitment. Do not send any payment. Write directly to the hotel of your choice for room reservations as soon as you can. At the Sheraton Park Hotel, mention ITE because a block of rooms is reserved.

INSCRIPTION PREALABLE
CONFERENCE MONDIALE du PLANNING POUR la CIRCULATION ROUTIERE
Washington, D.C.

21-26 aout 1961

31e Conference Mondiale,
Institut des Ingenieurs de la Circulation Routiere (I.T.E.)

Sessions Internationales de la Circulation Routière

Vous êtes prie de retourner cette carte le 15 juin au plus tard, afin que nous puissions vous envoyer les copies des bulletins redigés dans la langue de vôtre choix et aussi faire les reservations pour le tour d'étude et pour toutes autres arrangements necessaires.

Ne considerez pas cette carte comme une obligation. N'envoyez aucun versement d'argent. Ecrivez directement a l'hôtel de vôtre choix pour reserver vôtre chambre. Le Sheraton Park Hotel reserve tout un groupe de chambres pour le I.T.E. Si vous choisissez cet hôtel nous vous conseillons donc de mentionner le I.T.E.

APLICACION PARA ATENDER LA CONFERENCIA MUNDIAL de INGENIERIA de TRANSITO
en Washington, D.C. (EE. UU.)

del 21 al 26 de Agosto, 1961

Trigésima Primera Junta Del Instituto de Ingenieros de Tránsito (ITE)

Sesiones Internacionales sobre Ingenieria de Tránsito

Pónga por favor esta tarjeta al correo antes del 15 de Junio para poder mandarle las publicaciones técnicas en el idioma de su preferéncia, y para hacerle reservaciones de las excursiones y comidas pues el espacio será limitado.

Esto no es un compromiso. No mande ningun pago. Escriba directamente al hotel de su preferéncia lo mas pronto posible pidiendo reservaciones. En el Sheraton Park Hotel se ha reservado, un bloque de cuartos, pero es necesário mencionar el Instituto de Ingenieros de Tránsito al hacer la reservacion.

Name (please print) **Nom** (Ecrivez en lettres majuscules)
Nombre (en tipo de molde)

(Last) (Nom) (Apellido) (First) (Prenom) (de pila)

Wife's first name (if attending)
Prenom de l'epouse (dans le cas de visits)
Nombre de esposa (si piensa atender)

Street and No. Rue et nombre Calle y numero City Ville Ciudad State or Country Etat ou pays
Estado o País

Are you an ITE member?
ITE membre?
¿es ud. miembro del ITE?
☐ Yes, oui, si ☐ No, non, no

Is your wife attending?
Votre femme assiste-t-elle?
Lo acompana su esposa?
☐ Yes, oui, si ☐ No, non, no

I will stay at:
Residant a:
Hospadaje en:
☐ Sheraton Park Hotel
☐ .....
Other (specify)
Autre (indiquez)
Otro (indíquese)

Language preference for conference papers?
Langue preferée pour les bulletins de conference?
¿Idioma preferido para las publicaciones técnicas de la conferencia?
☐ English ☐ Français
☐ Español

Type of organization?
Genre d'organisation?
¿Clasa de Organizacion Representada?

☐ City Government	☐ County Government	☐ National Government	☐ Manufacturer	☐ Other (specify)
☐ Gouvernement Municipal	☐ Comte	☐ Gouvernement National	☐ Industriel	
☐ Gobierno Municipal	☐ Gobierno de condado	☐ Gobierno National	☐ Fabricante	☐ Autre (indiquez)
☐	☐ State or Province	☐ Association	☐ University	☐ Otro (indíquese)
☐	☐ Etat ou Province	☐ Association	☐ Universite	
☐	☐ Gobierno Provincial	☐ Sociedad	☐ Universidad	

A Family Conference!

The World Traffic Engineering Conference to be held in Washington will be a "family conference" in the best and most attractive sense of that term. It is hoped that members and friends of the Institute who plan to attend any or all of the sessions during the week of August 21 to 26 and later will bring along their families, including children.

Washington is a world-wide tourist attraction, with many points of historical and cultural interest. With very attractive hotel rates arranged for the time of the meeting, it offers an unequalled opportunity to see and become better acquainted with the capital of the United States.

Special plans are being made for the ladies, under the capable leadership of a Ladies Committee in the Washington area. Children have been kept in mind, too, in the planning.

Plan to combine an essential technical conference (the first traffic engineering meeting with truly world-wide participation) with a family vacation this summer. Bring your walking shoes, summer clothes, and a light wrap. As far as the men are concerned, all functions will require only business dress.

Cochez le prix desiré • Check appropriate fee • Indique Honorarios Apropiados

ITE Meeting August 21-23 Reunion du I.T.E. 21-23 août ITE Junta Agosto 21-23	International Sessions August 24-26 Sessions int'nls 24-26 août Sesiones Internacionales Agosto 24-26	Study Tour August 28 to Sept. 2 Tour d'étude, 28 août - 2 Sept. Excursion de Estudie Agosto 28- Set. 2
☐ $12.00 (member or non-member) (membre ou non-membre) (miembre o non-miembre)	☐ $20.00 ITE Member ITE Membre ITE Miembre	☐ (About $170 including meals and hotels) ☐ Environ 170 dollars, y compris repas et hotel) ☐ Come $170 incluyendo sustento y hospedaje)
	☐ $40.00 Non-member Non-member Non-miembre	

Evenements sociaux d'importance • Principal Social Events • Principales Eventos Sociales

	Cost per person Prix par personne Costo cada una	Number of Persons? Nombre de personnes? ¿Cuantas personas?
Men's Biscuit Banter Breakfast Petit dejeuner pour hommes Desayune Especial Para Varones	$3.00	.....
Kick-off Luncheon Dejeuner d'ouverture de la conf. Almuerzo Funcionario	$5.00	.....
Banquet Banquet Festín	$10.00	.....
Local Technical Tour Wed. Afternoon, Aug. 23 Tour d'etude (local), mercredi après-midi, 23 août Excursion Technica — Local — Miercoles por la tarde Agosto 23	$1.50	.....
Metropolitan Social-Technical Tour — All day Sunday, August 27 Tour social et d'étude (Wash. et des environs), toute la journée, dimanche, 27 août Excursion Technica y Tertalin — Municipal —Toda el día Domingo Agosto 27	$5.00	.....

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Registration Chairman

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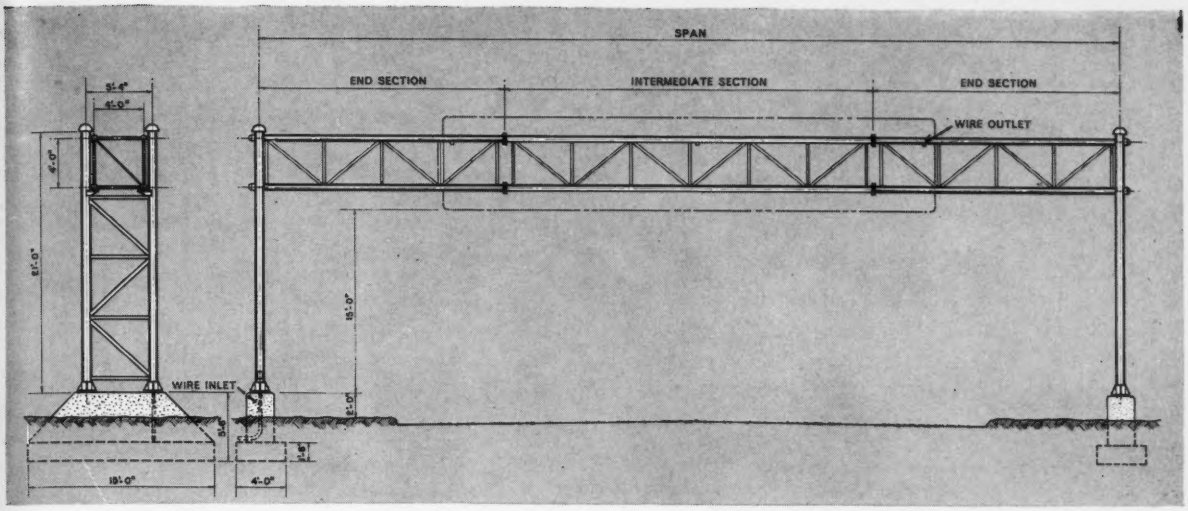

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Planet all-aluminum sign support structures are rugged. Even 120-foot spans with 500-square-foot signs will withstand 100-mile-per-hour winds.

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010

Outlined with "Codit" Reflective Liquid...

GEORGIA'S NARROW BRIDGES NOW LIGHT UP AT NIGHT

Reflectorized bridge is seen at half a mile...

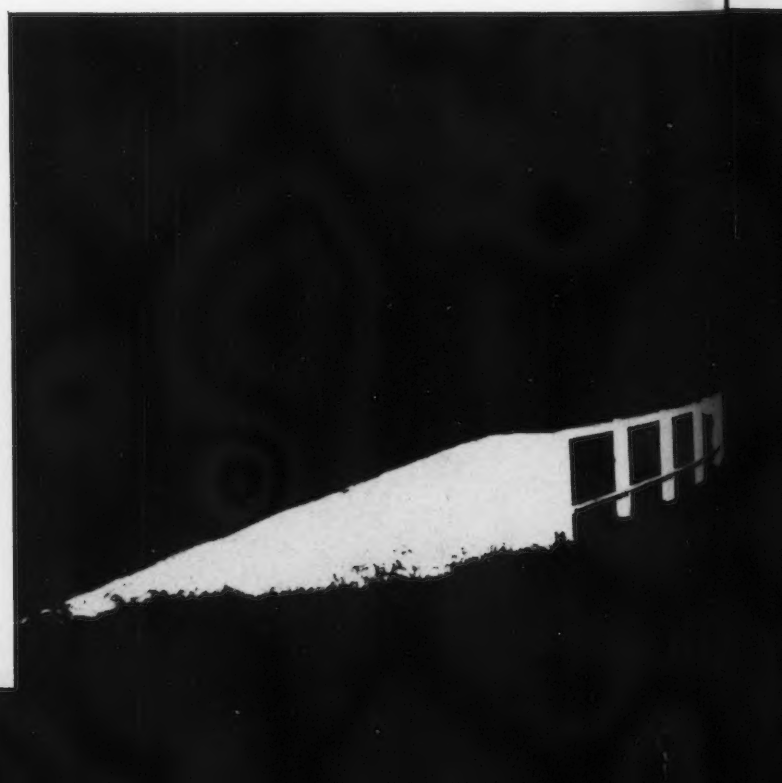
and takes shape...

...as the driver comes closer

To help drivers safely cross narrow bridges in the dark, the Georgia State Highway Department is using a unique form of "lighting." Over 800 substandard bridges (less than 24 feet wide) are being *outlined* with "Codit" Reflective Liquid. As a result they light up brilliantly at night when touched by headlight beams.

Tests show that a bridge reflectorized with "Codit" Reflective Liquid is first noticeable to a driver at about half a mile. He is immediately alerted, and as he comes closer the bridge begins to take shape. Its width and length are brightly outlined—a welcome guide to a safe crossing.

Georgia highway officials believe that this reflective material will definitely help reduce accidents and fatalities on narrow bridges. "Codit" Reflective Liquid is easy to apply to either smooth or porous surfaces. One step. One coat. It reflects 50-100 times brighter at night than white paint—and stays on the job for years.



BEFORE BEING PAINTED with "Codit" Reflective Liquid, this bridge was a nighttime hazard. It took sharp eyes to spot it, even up close. The ultimate remedy for any narrow bridge is to make it wide enough to handle today's cars and trucks. The next best solution—but an *immediate* one—is reflectorization with "Codit" Reflective Liquid.

APPLICATION IS EASY. "Codit" Reflective Liquid goes on like regular paint, with either brush or spray gun. Only one coat is needed. It's white by day, then amazingly bright by night because it contains millions of tiny reflective elements. And its long life provides protection for years.

***HOW MANY** narrow bridges need to be made safer in your county or state? Ask your 3M Representative for complete information on the ready answer: "Codit" Reflective Liquid. Or write Dept. RSC-51, The 3M Company, St. Paul 6, Minnesota.*

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IRF Pacific Regional Conference Attracts Highway Experts

Ranking highway and road transportation experts from 18 countries, totaling 350 people, attended the IRF Pacific Regional Conference in Sydney, Australia, February 27-March 3. Presented were some 50 technical papers covering a wide variety of subjects.

Opened by Lord Casey, former Australian Minister of External Affairs, the meeting drew representatives from Burma, Ceylon, Republic of China, Fiji, Hong Kong, India, Indonesia, Japan, Korea, Malaya, New Zealand, Philippines, Thailand, Turkey, Union of South Africa, United Kingdom, and the United States, as well as Australia. The presence of representatives from Turkey and South Africa reflected the world-wide interest engendered by the Sydney meeting.

U. S. delegates included a number of traffic engineers and highway officials. Among those present were: D. C. Greer, Texas State Highway Engineer; Robert O. Swain, IRF Executive Director; Chauncey N. Aldrich, U. S. Bureau of Public Roads; Thomas J. Fratar, consultant; Wilbur S. Smith, consultant; S. S. Taylor, Los Angeles General Manager of Traffic; and Roy E. Braden, consultant.

Wilbur S. Smith, of Wilbur Smith & Associates, New Haven, Connecticut, said that while criteria for establishing highway needs are inconclusive a start has been made. For example, he said, in most U. S. cities "attention is now being directed to needs for major type highway facilities—freeways, expressways and major streets. Recent studies indicate that, on the average in cities of every size and type in the United States the expected increases in car ownership and extension of low-density land uses justify about one mile of freeway for every 10,000 urban residents."

"On this basis," Mr. Smith continued, the United States urban population of approximately 120 million should be served by about 12,000 miles of freeway; by 1972 almost 15,000 route-miles would be needed and by 1975 the needs would have risen to approximately 16,000 urban freeway miles. Therefore, the anticipated 1980 urban population of more than 180 million would need about 18,000 miles of urban express highways."

Dates for the IV World Meeting of IRF in Madrid have been set as October 14-20, 1962. The last World Meeting was staged in Mexico City in October 1958.

City and Regional Planning Course at M.I.T.

The preparation of comprehensive plans and operation of comprehensive planning programs will be emphasized during the twenty-third of M.I.T.'s Special Summer Programs on City and Regional Planning to be held from Monday, July 17, through Friday, July 28, 1961.

The program will provide a comprehensive review of the principles of city and metropolitan planning and of the administration of urban planning programs. The approach will be from the viewpoint of the generalist, more concerned with breadth of interest and with recently developed techniques and practices than with completeness or depth of detail.

Special attention will be paid to the relation of the several functional aspects of planning to the comprehensive planning process. Emphasis will be on the synthesis of these aspects into comprehensive plans rather than on the detailed analytical approaches to the various functional problems. The material will be oriented toward those who lack formal professional training or advanced professional experience in comprehensive planning.

The program will consist mainly of seminars, whose primary goal will be to provide a general review of current planning techniques and basic planning principles. Topics will include: Modern concepts of planning; General or comprehensive plans; Highway and circulation planning; Urban renewal; Planning for schools and public recreation; Economic base studies; Freeways, transit, and off-street parking; Planning programs for metropolitan areas; Subdivision control; Zoning law and administration; Population surveys and forecasting; Long-range programming of public works; Use of computers in planning analysis.

There will be seminars each weekday morning and afternoon, and two evening sessions will be planned each week. An all-day field trip to some significant developments in suburban Boston is scheduled for Saturday, July 22. It is expected that arrangements will also be made to observe data processing equipment at work on planning problems.

This special summer program is open to practicing professional planners, to members and staffs of planning commissions and urban renewal agencies, and to men and women in such related fields as architecture, public administration, civil engineering, utilities, real estate, and industrial development who have a specific interest in comprehensive planning. Enrollment will be limited to about twenty-five people, to assure ample opportunity for all to participate in the discussions. Registration for only part of the program cannot be accepted.

Tuition is $225, due and payable upon notification of admission. Academic credit is not offered.

Seminar leadership will be provided by members of the faculty of the Department of City and Regional Planning and guest speakers selected for their ability to make a special contribution to the subjects under discussion. The planning seminars will be under the general direction of Roland B. Greeley, Associate Professor of Regional Planning.

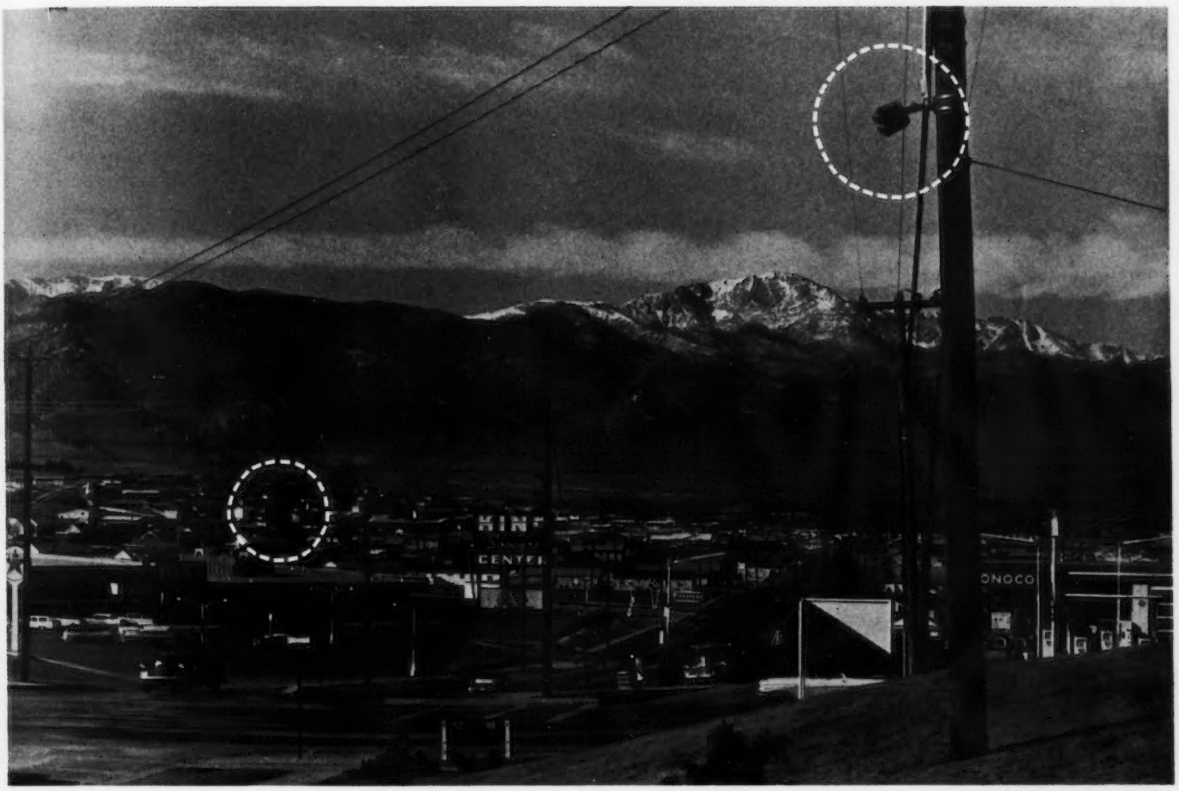
Clark Returns From UN Assignment in Caracas

E. F. Clark (Mem., ITE) New York State Director of Highway Transportation Studies, has recently completed an assignment as a member of a United Nations transportation study team to Caracas, Venezuela. The study team included M. Marc Langevin, former director of the Paris Metro system, Mr. Sigwid Ribbing, retired chief engineer of the Stockholm subway system, and Mr. Clark.

This was the first time the U. N. has assembled a three-nation team in the transportation field. It is also probably the first urban regional study to include review of the socio-economic problems in relation to transportation to be carried out by experts gathered from four nations.

The team worked with the Minister of Communications and the Minister of Public Works as well as with top government engineers in the review of numerous previous studies and the development of a comprehensive transportation plan for the Caracas region. The project was eight months in formulation and two months in operation.

THINK BIG ABOUT TRAFFITROL DETECTORS



The Traffitrol Detector near the top of that pole isn't aimed at Pike's Peak, but it *is* "looking" at a busy Colorado Springs intersection approach about 50 feet away. From this vantage point it has an unobstructed view of two lanes and controls the shopping center access signal in any weather.

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AASHO Road Test Reports Delayed

The Highway Research Board of the National Academy of Sciences—National Research Council has announced that the reports of the research findings of the AASHO Road Test will not be published until completion of the data analyses, which will require another four to six months. "This action," said Chairman W. A. Bugge, "is taken in accordance with the policy laid down at the inception of the AASHO Road Test. Any information released during the research data analysis period would necessarily be premature, incomplete and unauthorized. It follows that any conclusions drawn in advance of the fact would be open to serious question."

Two preliminary reports are being prepared and should be available in another month. The first will cover the background and concepts of the project; the second will describe in detail the construction of the test facilities. Both reports will form a basis for complete understanding of the final reports, which will cover the technical data produced during the test.

The Road Test, sponsored by the American Association of State Highway Officials, is a scientific study of the performance of highway pavements and bridges of various designs when subjected to repeated passages of vehicles applying known loads.

Dramatic Population Redistribution Likely in 20-30 Years

A dramatic geographical redistribution of America's metropolitan population will be continued for at least the next 20-30 years if present trends continue, forecasts Dr. Jerome P. Pickard, research director of the Urban Land Institute, in the current issue of *Urban Land*. The ULI, publisher of *Urban Land*, is an independent research organization specializing in urban planning and development.

These conclusions are based on the great differential in 1950-60 metropolitan area growth within the metropolitan region, including 40 Atlantic seaboard and Great Lakes-Midwestern areas and in the "outlying" regions, with 37 major metropolitan areas as defined by the author. The outlying areas grew 46 per cent, from 21.7 million population to 31.7 million, compared to the 19 per cent increase—48.4 million to 57.5 million—of the areas in the metropolitan region.

The analysis points out that 29 outlying areas grew faster than the national average growth of 27 per cent while 33 areas in the metropolitan region increased at a slower rate. All ten of the fastest growing metropolitan areas, according to the 1960 census, were in the Floridian, Southwest or California metropolitan regions. Seven of the 10 areas of slowest growth were in the Atlantic metropolitan region.

A national population of 211 million by April 1, 1970 is predicted, with major metropolitan areas having 114 million — 70 per cent — of this total. Metropolitan population, in outlying areas will grow at a 40 per cent rate for a 1970 total of 47 million. The metropolitan region areas, increasing at 14 per cent, would contain 67 million.

Dr. Pickard states this growth rate, 21.5 million people over the decade for a 23 per cent increase, "is a more accurate measure of anticipated metropolitan expansion than the national average projection of a 17 per cent increase in population."

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New Appointments

Voorhees Establishes Own Consulting Firm

Alan M. Voorhees (Mem., ITE) left the Automotive Safety Foundation on May 1, to establish his own private consulting firm.

Alan M. Voorhees

In his work with the Foundation, Voorhees specialized in transportation research and planning. He was a consultant on major transportation studies in Baltimore, Washington, New Haven, Hartford, Los Angeles, San Francisco and Boston and also assisted the National Committee on Urban Transportation in developing research procedures now being used by many cities in long-range transportation planning.

Voorhees developed several new techniques for projecting future traffic patterns on the basis of land use that have gained widespread use. He holds the Highway Research Board Award and the Past Presidents' Award of the Institute of Traffic Engineers for his research into relationships between traffic generation and land use.

While with the Foundation, Voorhees was involved in extensive research on urban growth trends and participated in numerous studies concerned with the future form of our cities. He demonstrated by various procedures how transportation requirements can be effectively reduced by proper planning of urban areas.

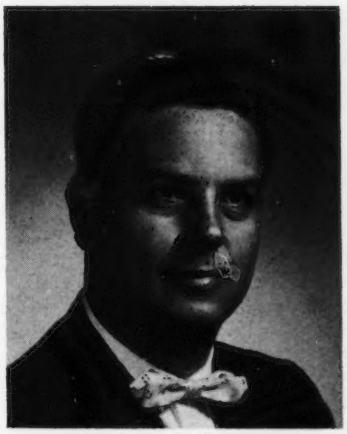
Prior to joining the Foundation in June, 1952, Voorhees was the city planning engineer for Colorado Springs, Colorado. He graduated from Rensselaer with a Bachelor's Degree in Civil Engineering and has a Master's Degree in City Planning from the Massachusetts Institute of Technology and is a graduate of the Yale Bureau of Highway Traffic. In addition to his membership in the Institute of Traffic Engineers, he holds membership in the American Institute of Planners and the American Society of Civil Engineers.

The firm being established will be known as Alan M. Voorhees and Associates with headquarters in Washington, D. C. It will specialize in urban planning with particular reference to transportation needs.

Voorhees is being retained by the Automotive Safety Foundation in a consulting capacity to assist in concluding a number of urban transportation studies on which that organization currently is engaged.

Barnett Named Traffic Supervisor in Phoenix

Mr. Norman C. Barnett, City Traffic Engineer of Sioux City, Iowa since November, 1958, has accepted an appointment as Traffic Supervisor with the Traffic Engineering Division of the City of Phoenix, Arizona.



Norman C. Barnett

Mr. Barnett attended the Yale Bureau of Highway Traffic in 1952-3 after serving fifteen months as Assistant Traffic Engineer in Albuquerque. After attending Yale he served as City Traffic Engineer of Tulsa for three and one-half years before moving to New Orleans while with Palmer and Baker Engineers, Inc. He left the consulting firm to start the first Traffic Engineering Department for Sioux City. Norman is a civil engineering graduate of the University of New Mexico.

Schwanhausser Moves To Automatic Signal

Walter E. Schwanhausser, Jr. (Assoc. Mem. ITE) has been appointed Sales Engineer with Automatic Signal Division of Norwalk, Connecticut, Mr. Paul L. Green (Mem. ITE), Sales Manager, announced.

Mr. Schwanhausser was employed by the General Electric Company for

Walter E. Schwanhausser, Jr.

20 years and is widely known in the traffic control and outdoor lighting fields throughout the country. He recently was Manager of Application Engineering of the Outdoor Lighting Department of General Electric and prior to that was Application Traffic Engineer for Traffic Signal and Control Sales.

A native of Maplewood, New Jersey, Mr. Schwanhausser received his BS in Electrical Engineering from Rutgers University in 1941. In addition to his membership in ITE, he holds membership in the International Municipal Signal Association, American Institute of Electrical Engineers, and Illuminating Engineering Society. He has been active in committee work in all of his technical society affiliations and is the author of numerous papers on traffic control and highway illumination, which have appeared in technical publications.

James B. Rudden to Ramo-Wooldridge for Expressway Project

James B. Rudden (Associate Member, ITE) has joined the technical staff of Ramo-Wooldridge, a Division of Thompson Ramo Wooldridge Inc., where he will be a member of the Surface Traffic Control Section. As his first assignment, Rudden will be the

James B. Rudden

company's resident engineer in Chicago for the recently announced Congress Street Expressway study project.

Prior to joining Ramo-Wooldridge, Rudden was the Assistant Commissioner in the Department of Transit and Traffic in the City of Baltimore. Before that he was the Traffic Signal Engineer in Denver. He holds a bachelor's degree in electrical engineering from California State Polytechnic College, and has done graduate studies at the University of Colorado. His ten and one-half years of professional experience have been devoted to planning, development and application of electronic control equipment. Rudden has designed and placed in operation a variety of unique traffic control devices, and holds one patent in this field. He is active in electronic and traffic engineering professional affairs and, in addition to his ITE affiliation, is a member of the American Institute of Electrical Engineers, National Municipal Signal Association, and Maryland Society of Engineers.

Johnson Named to Research Committee

Pyke Johnson (Affil., ITE) has been named chairman of the Committee on Urban Research of the Highway Research Board.

In his new capacity, Mr. Johnson will give up his work as consultant to the Automotive Safety Foundation and will move his office to the Highway Research Board offices. He served as consultant to the Foundation for seven and a half years, following his retirement as president of the Foundation.

A former chairman of the Highway Research Board, Mr. Johnson is well-known in this field and his selection as chairman of this important committee is a most logical choice.

Illinois Highway Chief Elected ARBA President

Ralph R. Bartelsmeyer, chief highway engineer of the Illinois Division of Highways, is the new president of the American Road Builders' Association.

Mr. Bartelsmeyer succeeds Nello L. Teer, Jr., Durham, N. C., contractor, as head of the 7,000-member national organization which is representative of all segments of the highway industry and highway engineering profession.

ARBA members also elected one new vice president and seven new directors. The new vice president is Boyd S. Oberlink, senior vice president of Allis-Chalmers Manufacturing Company, Milwaukee, Wis. Three other vice presidents were reelected, as was Treasurer J. N. Robertson of Washington, D. C.

Becoming Illinois' chief highway engineer in 1953, Mr. Bartelsmeyer has been in charge of a program which has more than tripled in size during his administration. Widely respected in the profession, he served as president of the American Association of State Highway officials in 1959.

At present he is a member of the executive committee of the American Association of State Highway Officials, a member of the board of directors of the National Safety Council, and a member of the executive committee and first vice chairman of the Highway Research Board.

Among the directors elected for three-year terms are Emmett H. Karrer, professor of Highway Engineering, Ohio State University, Columbus, Ohio, and Rex M. Whitton, Federal Highway Administrator, Washington, D. C.

Nugent to Yonkers As Court Administrator

Edward J. Nugent, (Assoc. Mem., ITE) traffic consultant for the Insurance Institute for Highway Safety since its establishment two years ago, has been appointed court administrator of the Yonkers, N. Y., City Courts.

The appointment, announced by City Judge Albert L. Fiorillo in Yonkers, became effective April 1.

In a story about Mr. Nugent's appointment in the *Yonkers Herald Statesman*, Judge Fiorillo was quoted as follows:

"Mr. Nugent brings to the job of

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Specify The Flashers With Performance Proven Dependability

engineering and design features that have made Time-O-Matic the leading manufacturer of flashers since 1932

- open frame construction for efficient heat dissipation
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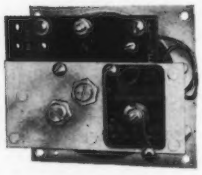
1 or 2 circuit, front-mounted cams and contacts out in the open for fast, easy adjustment, replacement. Compact size 4⅜" high, 4" wide, 2¼" deep



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Traffic Islands
Loading Zones
Warning Beacons
Flashing Stop Signs

managing the activities of the courts a broad knowledge of its role in education and accident prevention. His technical training, administrative experience and understanding of the complex responsibilities of the modern court will expedite the implementation of the American Bar Association recommendations."

Judge Fiorillo was referring to the recently completed study of the Yonkers courts by the American Bar Association, in which the position of court administrator was recommended.

A native of Yonkers, Mr. Nugent served successively in the Highway Engineering Department of the Westchester County Parkway Commission (1926-32), as junior engineer with the Yonkers Planning Board (1932-38), and as a member of the Yonkers Police Bureau (1938-53). In 1942 he was designated traffic engineer of the Police Bureau, and in 1947 he established the Traffic Engineering Bureau in the Yonkers Department of Public Safety.

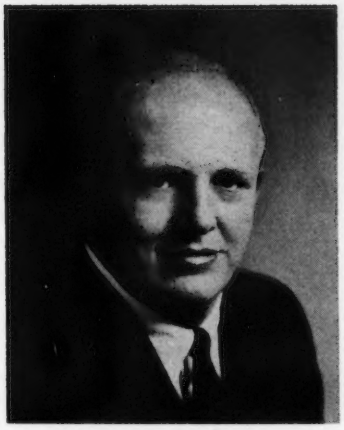
From 1953 to 1957 Mr. Nugent served as traffic consultant for the Insurance Industry Committee on Motor Vehicle Accidents in New York State. When the work of this committee was completed he became identified with the traffic engineering activities of the Accident Prevention Department of the Association of Casualty and Surety Companies in New York City. He served in this capacity until he joined the staff of the Insurance Institute for Highway Safety in Washington, D.C., in early 1959.

Trautman Elected VP of "City in City" Firm

James F. Trautman (Assoc. Mem., ITE) has been elected a vice president in charge of engineering and development of Atlantic Improvement Corporation, developers of the "city-within-a-city" to be built at Breezy Point in Queens County, N. Y.

Mr. Trautman was formerly an Associate with the engineering and architectural firm of Tippetts-Abbett-McCarthy-Stratton, where he supervised the preparation of the master plan for Breezy Point.

According to Martin Seligson, president of Atlantic, Mr. Trautman will be responsible for supervision of all engineering and development work at Breezy Point, including coordination of work by contractors, private builders and public agencies; installation of streets, highways, sewers, water facilities and other utilities and for supervision and coordination of the design of projects to be constructed by Atlantic.



James F. Trautman

He is a graduate of Carnegie Institute of Technology, 1950, and holds graduate degrees from Yale University, 1951, and the University of Pennsylvania, 1953.

He is a member of the American Society of Civil Engineers in addition to his membership in the Institute of Traffic Engineers and is registered in New York, New Jersey and Mississippi.

Job Changes

Carl T. Heglund—formerly Traffic Engineer in Champaign, Illinois; is now Streets and Traffic Engineer for the City of Bloomington, Minnesota.

Jack D. Huffman—formerly Traffic Designer with the Texas Highway Department in Beaumont, Texas; is now Traffic Engineer with the City of Waco, Texas.

Fred J. Kaiser, Jr.—formerly City Traffic Engineer in Racine, Wisconsin; is now Field Engineer with the Bureau of Traffic, Ohio Department of Highways in Columbus, Ohio.

Howard S. Lapin—formerly a staff engineer with Day & Zimmermann, Inc., in Philadelphia, Pennsylvania; is now on the staff of Arthur D. Little, Inc., in Cambridge, Massachusetts.

Kevin A. MacNaughton—formerly Assistant Civil Engineer with the New York State Department of Public Works, Bureau of Highway Planning in Albany, New York; is now Traffic Engineer for the City of Kettering, Ohio.

David N. Oliphant—formerly Traffic Engineer with the City Engineers Department in Salisbury, Southern Rhodesia; is now associated with the firm of Van Niekerk, Kleyn and Edwards in Nairobi, Kenya.

Giorgio Pellegrini—formerly Research Associate with the Institute of Highway Construction, University of Rome, Italy; is now Traffic Engineer with Renardet S.p.A. Consulting Engineers, in Rome, Italy.

Title Changes

James A. C. Andrews—is now Project Engineer with the Foundation of Canada Engineering Corporation, Ltd. in Vancouver, B.C.; was Group Leader.

Harold A. Breeding—is now Design Engineer in Area and Speciality Lighting Design Engineering for General Electric Company in Hendersonville, North Carolina; was Development Engineer in the Laboratory of the Outdoor Lighting Department.

Edgar F. Copell—is now Chief Engineer, New England Branch of De Leuw, Cather and Brill in Brookline, Massachusetts; was Consulting Engineer.

Michael S. Dimitri—is now President of Ramp Consulting Services, Inc., in New York City; was Assistant Vice President.

Grannis P. Parmelee—is now Acting Manager of the Engineering Department, Automobile Club of Southern California in Los Angeles; was Manager, Sign Services.

Charles W. Prisk—is now Special Assistant, Office of Research, U. S. Bureau of Public Roads in Washington, D. C.; was Director, Highway Safety Study.

James W. Shaw—is now Vice President of Ramp Consulting Services, Inc., in New York City; was Chief Engineer.

Edwin M. Smith—is now Senior Traffic Engineer with the Texas Highway Department in Austin, Texas; was Traffic Designing Engineer.

New Publications

References on Theory of Traffic Flow and Related Subjects

Circular 438, Highway Research Correlation Service, Highway Research Board, 2101 Constitution Avenue, Washington, D. C., February, 1961, 10 pages. Mimeo.

The Committee on Theory of Traffic Flow of the Highway Research Board has prepared a listing of the important publications up to October, 1960, which deal with traffic flow and other related problems. The area has been broken into ten different subjects including such things as traffic dynamics, simulation of traffic flow, intersection situations, etc.

Motor Vehicle Speeds

Bibliography 27, Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. 86 pages.

As part of an investigation on vehicular speed regulations at the Engineering Experiment Station at the University of Illinois it was necessary to prepare a bibliography. A thorough review of material in libraries at the University of Illinois and the Bureau of Public Roads in Washington, D. C. from the early 1920's through December, 1958, resulted in the publication of Bibliography 27 by the Highway Research Board. A special effort has been made to make the bibliography easy to use. The 609 references have been broken into seven major sections by subject and these have been further subdivided as necessary. A system of cross-references has also been included as well as a complete author index.

Among the major headings are the following: Driver, Highway, Vehicle, Traffic Operation, Collision, and Studies, all as related to vehicular speed.

Some Evaluations of Highway Improvement Impacts

Bulletin 268, Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. October 1960. 119 pp. $2.60.

In this bulletin are contained eight papers bearing on the subject matter of the title, as presented at the 39th Annual Meeting of the Highway Research Board, as follows:

"Freeway Impact on Municipal Land Planning Effort," by Edgar M. Horwood.

"Influence of Highways on Selection of Six Industrial Locations," by Donald J. Bowersox.

"Highway Bypasses, Natural Barriers and Community Growth in Michigan," by Louis A. Vargha.

"Measuring the Economic Impact of a Limited-Access Highway on Communities, Land Use, and Land Value," by George E. Bardwell and Paul R. Merry.

"An Investigation of Some Economic Effects of Two Kentucky Bypasses: The Methodology," by Eugene C. Holshouser.

"Analyzing the Socio-Economic Impacts of Urban Highways," by William W. Nash and Jerrold R. Voss.

"Influence of Transportation Changes on Urban Land Uses and Values," by Paul F. Wendt.

"Evaluation of Highway Impact," by A. S. Lang and Martin Wohl.

Parking Dimensions—1961 Model Cars

Engineering Notes No. 611, Automobile Manufacturers Association, 320 New Center Bldg., Detroit 2, Michigan. February 1961. 17" by 22" sheet, folded. Free.

For the convenience of municipal street and highway department officials, parking garage and parking lot managements, and garage building contractors, the Automobile Manufacturers Association has compiled herein those dimensions of the 1961 model automobiles which relate to parking.

These dimensions result from measurement of representative standard vehicles under full design load conditions which include water, oil, gasoline, a 300 pound passenger load in the front seat, 450 pound passenger load in the rear seat, and tires inflated to the recommended pressure. The various height dimensions could be as much as three inches greater without the passenger load.

The dimensions shown for each make of car include its various models and body types, but special extended wheelbase models are excluded. Where a range of dimensions is given it is not necessarily directly related to the range in another column, i.e., a "short wheelbase" model is not necessarily the "short overall length" model of the adjacent column.

Guide to Traffic Safety Literature

Volume 4. National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. 56 pp. $0.50.

This valuable guide lists the exact sources of traffic safety articles published in books, pamphlets and magazines received by the National Safety Council during 1959. It provides important reference material enabling you to find information available on traffic safety that you might not otherwise locate.

These articles contribute either to the technical aspects of traffic safety or to the development of programming. (Small leaflets intended for mass education are not included). Two helpful lists, "Addresses of Periodicals Indexed" and "Directory of Publishers and Organizations" are also printed in this guide. 6" x 9"

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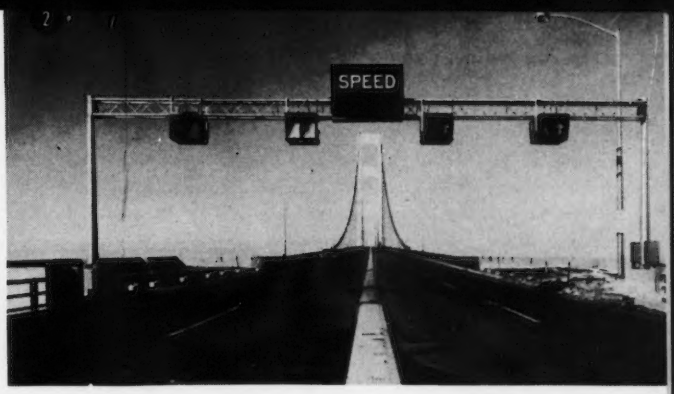

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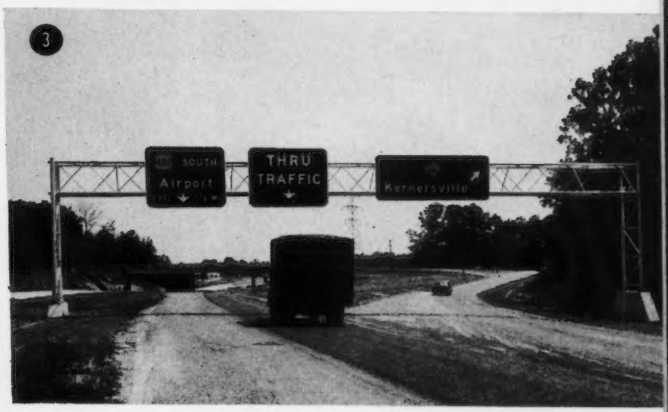

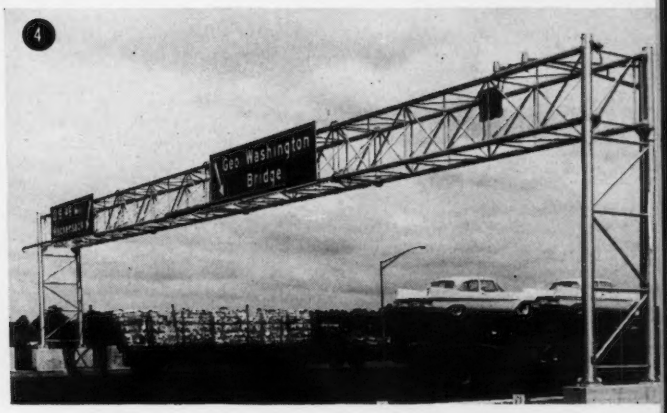

P & K all-aluminum sign spans, while meeting your most rigid strength requirements, make your dollars go farther. The natural light weight of aluminum means faster and easier installation. Notice in all the illustrations that, as a safety bonus, there is no center support, regardless of the length. This means no obstructions beneath the span, lower installation costs, yet you get all the strength you need. And, of course, every span is static load tested before shipping. Another important dollar-stretcher is aluminum's corrosion resistance... never needs painting or other costly maintenance. With P & K sign spans, your first cost is your last cost!

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1. INSTALLATION: 88'6" aluminum box truss sign span
OWNER: Richmond-Petersburg Turnpike Authority
LOCATION: James River Bridge
CONSULTING ENGINEERS: Parsons, Brinckerhoff, Hall & MacDonald

2. INSTALLATION: 56 foot aluminum box truss signal span
OWNER: State of Michigan, Mackinac Bridge Authority
LOCATION: Mackinac Bridge, St. Ignace, Michigan
CONSULTING ENGINEERS: D. B. Steinman

3. INSTALLATION: 90 foot aluminum box truss sign span
OWNER: North Carolina State Highway Commission
LOCATION: Interstate Route 40

4. INSTALLATION: 110 foot aluminum box truss sign span
OWNER: New Jersey Turnpike Authority
LOCATION: Exit 18, New Jersey Turnpike
GENERAL CONSULTANT: Howard, Needles, Tammen and Bergendoff
CONSULTING ENGINEERS: Barnett & Herenchak

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New Equipment and Methods

Publication of product announcements in this section should not be construed as endorsement or approval by the Institute of Traffic Engineers.

GE Offers Booklet on Illumination of Signs

A new booklet entitled "Adequate Highway Signing" is available from the General Electric Company. This bulletin (OLP-1023), which is 20 pages in length, discusses criteria for determining proper highway sign lighting, giving sketches and photographs of typical General Electric Fluoroflood fixture installations. The bulletin describes how to calculate required illumination levels, proper mounting of lighting fixtures, and photometric data for luminaires, with and without covers, parallel and tilted. Also includes a summary of application and order information.

General Electric Company, Schenectady 5, N. Y.

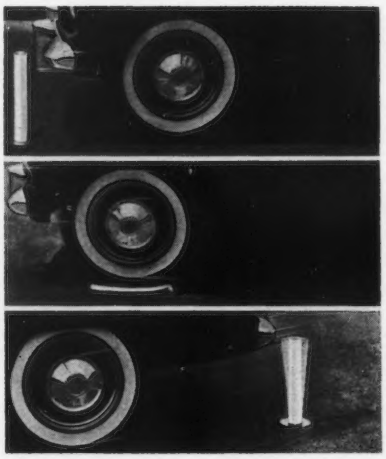
New Flexible Traffic Marker

A flexible traffic marker is now available at reasonable price for traffic control on highways, plant sites, parking areas, and construction jobs. Made with long-lasting "Hypalon" synthetic rubber, the brilliant yellow tubular marker snaps back even if hit by a car at 60 miles per hour, according to the maker. It stands erect throughout its long service life, but avoids damage to tires or fenders caused by pipes or other rigid markers.

"Hypalon" was specified by Nationwide Traffic Engineering Products Corporation for the marker because it is the only elastomer which will retain lasting coloration, as well as toughness and resilience under exposure to sun, weather, oils, grease, and ozone-charged atmospheres characteristic of heavily traveled highways. Tube construction has been engineered painstakingly to assure lasting resilience and dependable construction.

The body of the marker is a 16-inch tube of the rugged elastomer, two and one-half inches in diameter, mounted on a metal disc base. The base is affixed firmly to the pavement with mastic or epoxy compounds. Tests have shown that both base and tube can be run over repeatedly by automobile and truck wheels without damage, yet the marker can be dismounted in a minute's time.

The ability of the markers to be dismounted and moved is a major advantage, permitting ready revision of



traffic control plans without unnecessary expense. The base plates are inexpensive and can be left in position on the pavement without danger of damage to tires. In addition, temporary traffic measures on construction sites can be put in effect economically.

An alternative installation for use only on concrete pavement features a power-driven anchoring stud to which the tube can be attached. On dirt roads, the marker can be mounted on a stake driven flush with the road surface. Tubes can be reflectorized as desired.

Nationwide Traffic Engineering Products Corp., 2535 Mt. Carmel Avenue, Glenside, Pa.

Extruded Aluminum Street Signs

Municipal Street Sign Co., Inc. is now producing a new type of reflective street sign made of one-piece extruded aluminum, which incorporates a double-faced sign blade complete with necessary supporting fixtures. These street signs are known as their Type EA-15 and are furnished with "Scotchlite" reflective sign faces.

"Municipal" will be glad to furnish extruded aluminum blade blanks for those who have vacuum applicators for applying reflective sign faces on sign blanks. Individual reflective "Scotchlite" sign faces are also available.

This sign also comes in a wing mounting style—Type EA-16.

Detailed specifications and prices furnished on request.

Municipal Street Sign Co., Inc., 128-14 14th Avenue, College Point 56, N. Y.

High Visibility Vest

Albert W. Pendergast Safety Equipment Company announces a new fluorescent vest for men working on the streets and highways as well as in other locations where seeing them is important to their safety.

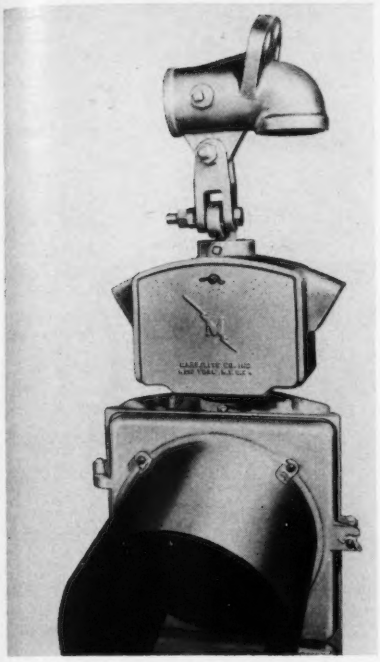
The vest is a brilliant flame-red fluorescent vinyl coated nylon. Light in weight, it does not interfere with movement in any direction. The size is universal to fit all men.

The cloth used is similar to that used in recent times in danger flags, which line the company also manufactures.

Albert W. Pendergast Safety Equipment Company, Tulip and Longshore Sts., Philadelphia 35, Pa.

Disconnect Hanger

Simple installation of a traffic signal is accomplished through the use of a disconnect hanger, manufactured by the Marbelite Company, Inc. The aluminum unit is available in two sizes in order to accommodate the 12 and 18 circuit terminal block to which is connected the signal cable from the controller. The cable enters the unit through a weatherproof opening. The lightweight disconnect hanger is connected to the span wire or mast arm by means of a balance adjuster. It is connected to the signal with a multi-circuit connector mounted within the hanger. The disconnect hanger enables the simple and swift installation, removal and substitution of a signal and is of particular interest to areas having



periodic maintenance programs, where only a brief interruption in signal operation can be afforded. Illustrated is a signal with 12 circuit disconnect hanger and aluminum mast arm mountings.

Marbelite Co., Inc., 175 N. 10th Street, Brooklyn 11, N. Y.

Insulation for Highway Bridges

Chemical research has produced a new type of foam-plastic insulation for highway bridges that normally become dangerously icy even when their approach roads are still safe.

When sprayed to the underside of highway bridges, the insulation is also expected to reduce the rapid deterioration of bridge decks caused by frequent freezing and thawing or by the use of large amounts of de-icing salts.

Urethane bridge insulation, developed and test-proved by Barrett Division of Allied Chemical Corporation, is the first insulation ever marketed especially for highway bridges, according to an announcement by G. Peter Oldham, Barrett vice president.

He said that many drivers have experienced the uncomfortable sensation of suddenly coming to an icy bridge while driving along an otherwise safe road. "But when the underside of a bridge is insulated with urethane, it has practically the same rate of heat loss as a road surface. Therefore, it will not ordinarily become iced before the road pavements approaching either side of the bridge.

"One inch of urethane has about the same insulating capabilities that two to five feet of earth provide beneath a road surface," he added.

Oldham said that a series of tests are being conducted with the cooperation of the New York State Department of Public Works and the New Jersey State Highway Department. The results to date show:

1. Urethane bridge insulation reduced what the officials call "premature icing."

2. It therefore eliminated the necessity of using excessive amounts of deicing salts.

3. It will also reduce the number of times that the concrete bridge deck freezes and thaws.

Barrett Division, Allied Chemical Corporation, 40 Rector Street, New York, N. Y.

Line Marking Caravan

The latest line-marking methods and striping equipment for streets and highways are currently being demonstrated throughout the United States by a unique, mobile linestriping caravan sponsored by the M-B Corporation. For the first time, state and county highway officials as well as municipal street officials and private contractors will be able to see and compare M-B equipment under actual, local street and highway marking conditions.

The caravan is comprised of a heavy-duty truck-mounted striper equipped with a front or rear mounted carriage for centerline striping and a right hand mounted outrigger assembly specifically designed for edge-line striping; the 120-gallon paint capacity, self-propelled Master 10 Model; the medium size self-propelled Linemaster with automotive-type steering; the hand-propelled Model 3-10; and the new spike-shaped M-B Line-O-Guard for protecting newly painted traffic lines. Paint capacities for these models run from 10 to 750 gallons, and demonstration will show single, double or triple lines . . . one or two colors. Featured will be specially designed M-B mechanical and electrical timing devices for use in accurate striping of intermittent lines of predetermined cycles, and M-B Rotary-Type Bead Dispensers for use in accurately applying reflective beads, as well as the many other components that make up advanced linestriping equipment. Accompanying the Caravan will be an M-B factory operator, District Representative and M-B Distributor from each territory.

M-B Corporation, New Holstein, Wis.

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Vehicle and Pedestrian
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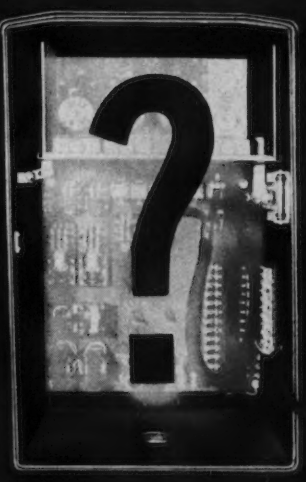

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Median Guard Rail Installed on Penn Turnpike

Workmen installed a double line of steel guard rail on the Pennsylvania Turnpike's median strip. This protective barrier, consisting of Armco Flex-Beam sections, will reduce head-on collisions, particularly where the median strip is only ten feet wide and no longer adequate for today's traffic—100,000 vehicles per day in 1960. Except where the grass median is 90 feet wide or more, the entire toll road will receive steel medials.

Armco Drainage & Metal Products, Inc. furnished its Flex-Beam for the first 60-mile stretch of the new median barrier. Winter halted construction on the project, but work is resuming with the coming of warmer weather.

Armco Steel Corporation, Middletown, Ohio

Fluorescent Cones in Red or Standard Yellow

Traffic cone markers in bright fluorescent red for high visibility, and made of one-piece rotationally-cast plastisol for longer life, have been introduced by Jobet Industries, Inc.

Plastisol construction assures greater damage resistance, good abrasion resistance. Jobet cones are almost impossible to tear or cut and are also resistant to gasoline, oil, tar and paint —which can be easily cleaned off thus extending the useful life of the cones. Although constructed to outlast cones of other material, they are competitively priced, according to the manufacturer.

They have excellent resistance to cold weather breakage because (1) the plastisol is especially formulated for cold weather use and (2) a new concept in the manufacturing process assures complete cure.

Jobet cones are 18" high, tapering from a 2⅛" top diameter to 8" bottom diameter an 11" square base. 28" cones are also available.

The fluorescent red has the welcome

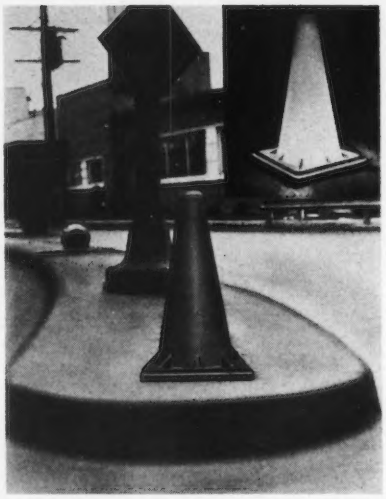


Photo shows use of cone on safety island in Green Bay, Wis. Inset at top shows cone lighted from within for night use by police officers or street or highway workmen.

ability to reflect light. If lighted from within, the brilliant red cone can be seen from great distances, making them ideal lighted markers for safety islands, drive approach areas, airport taxi and loading areas. They can be lighted from within with dry cell batteries for night use by road workmen or police departments.

Available also in standard yellow, the Jobet cones can be had sealed, or with either or both ends cut out.

For further information, contact J. G. Gokey, Jr., President.

Jobet Industries, Inc., 547 W. So. Park Ave., Oshkosh, Wis.

Infrared Traffic Detector

An infrared traffic detector developed by Infrared Industries, Inc. for vehicle detection has been approved for use on Federally-sponsored roads, E. Douglas Reddan, president of Infrared Industries, Inc., announced. A substantial quantity of the devices has been ordered by the Eagle Signal Company, Moline, Ill., for marketing to municipal, state and Federal highway agencies under an exclusive franchise, Reddan said.

Prior to its acceptance by the Bureau of Public Roads which allows Federal financial participation in programs using detectors for pattern analysis or actuation of traffic signals, the instrument was laboratory and field tested by the Bureau's Traffic Operations Division and had undergone more than two years of field service on Massachusetts' famed "Electronics Highway," Route 128, adjacent to Infrared Industries' main plant in Waltham, and many other locations throughout the country.

In operation, the unit emits a "coded" beam of infrared radiation which is bounced from passing vehicles and its reflection caught by a sensitive infrared detector in a manner analogous to radar. The echo signal can be used for vehicle counting and analysis, as well as to actuate traffic signals or controls. It may also be integrated by computers with other data to provide complete traffic control systems. The scanner, Reddan said, employs the same technology as used in the infrared guidance system of the Sidewinder missile and in the USAF Midas missile defense alarm satellite. Infrared Industries is a primary supplier to these military programs as well as a builder of industrial controls and infrared test instrumentation.

Eagle Signal Company has conducted field tests in various states with pre-production units with most encouraging results, and Eagle expects to be in a position to make deliveries in approximately three months.

Infrared Industries, Inc., Waltham, Mass.

G-E's New Closed Circuit Monitors

General Electric Company has engineered a new series of closed circuit television monitors equipped to fill the wide range of needs in the traffic and transportation surveillance-control field.

The monitors are capable of three times the picture quality of home sets, but are simpler to maintain and adjust. They operate with any standard monochrome camera.

Because of their exceptional picture detail—an 800-line minimum horizontal resolution—the monitors exceed the capabilities of all standard camera chains, thereby taking 100-per cent advantage of camera performance.

This makes the monitors particularly effective in visual communications systems using General Electric's new high-resolution, transistorized TE-9-A camera, a compact, self-contained

EAGLE monotrol® system

saves 60% in wiring costs alone *at Columbus, Ohio*

In the Words of — **Albert G. Giles**, Director of Public Safety, City of Columbus and **John L. Gallagher**, Chief Traffic Engineer, City of Columbus

Eagle "Monotrol" Central Office Master Control Panels

"In December, 1960, Columbus, Ohio, completed a comprehensive three-year traffic modernization program. We now have four complete Eagle Monotrol Multi-dial Systems, totaling 298 signalized intersections of the city's 480."

Eagle EF-20 Local Multi-Dial Controllers

"Each of the four systems is interconnected by Monotrol providing *thirty-one functions over a single pair of wires,* saving us 60% in wiring costs alone, which is, of course, of basic concern to all Municipal purchasing. Further economies will be realized in the future because the extremely flexible system will not require costly, complex replacements and alterations. Although we are using only nine functions at present, many more will be added. Without these available spare functions, future growth of the system would be virtually impossible.

"It is too early to quote statistics on these recently installed systems, but they have definitely speeded up the flow of traffic through our city and we fully expect a concurrent drop in our accident rates.

"The components have not presented any maintenance problems over the three-year installation period, other than routine matters, such as cleaning contacts and lubrication once a year."

INVESTIGATE AND SPECIFY EAGLE MONOTROL® SYSTEMS for Traffic Control flexibility, expansibility and built-in savings. . at time of installation. .and in the future.

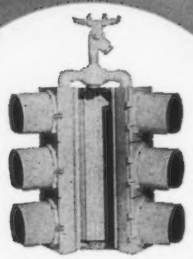
EAGLE SIGNAL COMPANY, Municipal Division
Dept. TE-561, MOLINE, ILLINOIS
Please send me more information on your Monotrol and Multi-dial Controllers as used in Columbus, Ohio installation.

NAME AND TITLE

ORGANIZATION

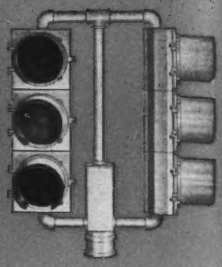
FULL ADDRESS

A Complete Line of Traffic Signals By ECONOLITE



Three way three section 8" Signal for Span Wire Mounting #3-E31G1G1A-4003A.

One way three section 12" signal with Elevator Plumbizer and Backplate #1-T31G2G2A-8002.

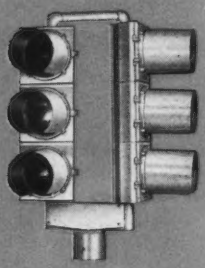


Two way three section 8" Signal for Post Top Mounting with Terminal Compartment #2-31G3G1A-3002.

12" Signal Adapter, "Red Lens" shown installed on 8" Signal. Adapter Complete, #TA11GGA.

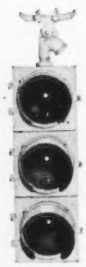
ADVANTAGES

1. Complete assembly flexibility into rigid units.
2. Excellent signal indication and freedom from "sun phantom."
3. Maintenance ease, unsurpassed.
4. Shurlock fittings for positive alignment.
5. Precision die-cast interchangeable parts.



Two way three section 8" Signal for Horizontal Post Top Mounting with Terminal Compartment #2-E31G3G1A-8005.

12" Signal Adapter, "Green Arrow" shown installed on 8" Signal. Adapter Complete, #TA14GGA.



One way three section 8" Signal for Span Wire Mounting #1-E31G1G1A-4001A.

One way three section Combination Signal 12" Red 8" Amber and Green with Backplate for Adjustable Mast Arm Mounting #1-C36G1G2A-8011.

ECONOLITE CORPORATION

Write for further information...

ECONOLITE CORPORATION

Factory and General Offices
8900 Bellanca Ave., Los Angeles 45, Calif.

model that functions efficiently under severe environmental conditions.

Because of this and other improved operational capabilities, the new monitors are ideally suited to applications in the transportation and other municipal and commercial fields today. These include such roles as traffic control of urban freeways, security surveillance and traffic control in rail, truck and other terminal areas, and safety surveillance of remote or isolated areas.

For maximum flexibility in filling varied specific needs in closed circuit television, General Electric provides the monitors in cabinets or rack mounting and in three screen sizes—14, 17 and 21-inch.

The monitors are being added to General Electric's broadcast equipment line as well as the Intra-Tel-closed circuit television package.

General Electric Communication Products Department, P. O. Box 4197, Lynchburg, Virginia.

Positions Available

CITY OF WEST PALM BEACH FLORIDA

Position: City Traffic Engineer, in charge of all traffic, parking and lighting problems and the design, installation, maintenance and operation of all traffic signals, pavement markings and parking meters.
Requirements: Engineer with a minimum of three years of city experience.
Salary: $6,900 to $8,280, with yearly increases to the maximum. Starting salary may be above the minimum, depending upon qualifications.
Apply: Dean S. Robinson, Director of Personnel, City Hall, West Palm Beach, Florida.

TORONTO, ONTARIO

Position: Traffic Engineer. General administrative and technical duties for transportation analysis and geometric design in the Transportation Division of Metropolitan Toronto Planning Board.
Requirements: Graduate engineer with experience in traffic engineering preferred.
Salary: $6,580 to $7,633 with fringe benefits.
Apply: R. J. Desjardins, Director of Transportation Division, Metropolitan Toronto Planning Board, 790 Bay Street, Toronto, Ontario.

CITY OF CHATTANOOGA, TENN.

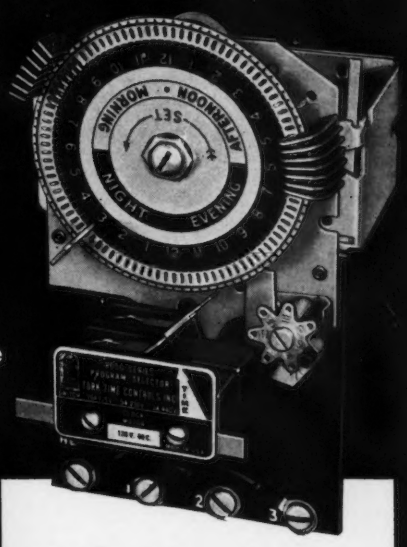
Position: Assistant Traffic Engineer.
Salary: $535-$670 per month.
Starting rate commensurate with experience.
Requirements: Graduate from college with degree in engineering, preferably supplemented by graduate level courses in traffic engineering plus a minimum of two years experience in traffic engineering work with progressive responsibilities.
Apply: Ralph G. Lewis, City Traffic Engineer, Room 215 City Hall, Chattanooga 2, Tennessee.

(Continued on page 53)

ONE TIME SWITCH REPLACES SEPARATE TIME SWITCHES

For Daily System Dial Selection

If you are still using conventional time switches in your traffic controllers — here's how you can improve performance and save money with TORK'S NEW One Dial-Three Circuit Program Time Switch for 3-dial controllers.



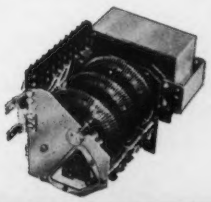
One dial controls 3 separate circuits . . . circuit #1, normally energized, controls dial #1 for normal daytime and nighttime operation . . . circuit #2 switches to controller dial #2 for "morning inbound" . . . circuit #3 switches to controller dial #3 for "evening outbound".

Check these exclusive TORK features:

- Just one time switch assures far simpler, more accurate field installation than separate time switches .
- There's no danger of wrong controller dial being energized due to improper synchronization between 2 or more time switches.
- Ideal for replacement of older, obsolete type time switches. Mounting plates fit old time switch mounting holes of most any traffic controller.
- Special tabs on 24 hour dial provide accurate 15 minute switching changes. 1 to 44 operations per day . . . minimum setting 15 minutes. Same circuit remains energized when adjacent tabs are set alike.
- Can be set accurately . . . with 15 minute tabs, there's no depending on human element to slide ON-OFF trippers to operating times on dial.
- Skip feature keeps circuits #2 and #3 (controller dials 2 and 3) OFF on any selected days.
- 20 Hour Reserve Power Feature is available to insure time keeping during power failures.

Write today for complete details. Other TORK Time Switches for Traffic Control include a new 3-Dial Program Time Switch, which provides 3 different programs during the week or controls system-dial-selection and flashing too — all with one timing motor . . . also the most accurate and versatile SPDT Time Switch for straight flashing. All types available with or without Reserve Power feature, and with mounting plates to fit your controllers.

No charge samples available for your examination and test without obligation. Contact us now . . . or contact your Traffic Controller manufacturer or any Authorized TORK Electrical Distributor.



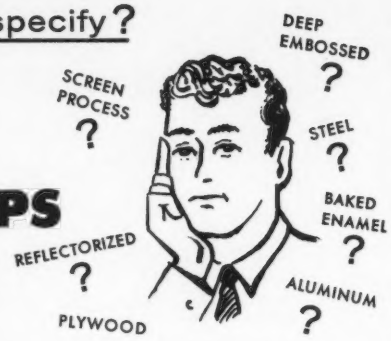
TORK CLOCK

TORK TIME CONTROLS, INC.
MOUNT VERNON, NEW YORK

In Canada: Dominion Electric Manufacturing Co. Limited, Toronto

What signs shall I specify?

LYLE'S SIGN SERVICE HELPS YOU DECIDE

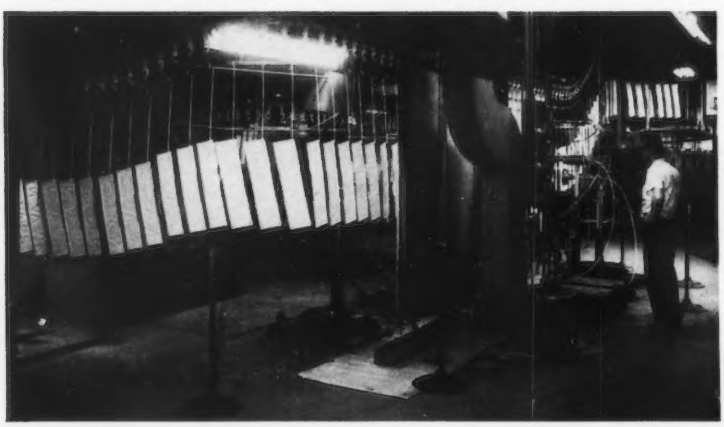


New sign materials and processes and modern methods of handling the old, provide important new ways to solve your signing problems. And Lyle, as a manufacturer of quality street marker and traffic control signs, has available *all types* of sign materials and styles to meet your various requirements. That's why the experience of LYLE'S sign representatives in helping to solve signing problems for dozens of cities and towns can be so valuable to you now.

And, whatever materials you select, Lyle's know-how assures you of highest quality. For example, tested and time proven, the steel blanks are a hot dipped, continuous process galvanized material, bonderized after fabrication. This special steel Lyle uses costs so little more than non-rust proofed material—yet lasts many times longer. Available too, are various types and gauges of aluminum sheeting and extrusions, and high density plywood.

Consider also finishes. Choose from baked enamel or reflective materials. Available are the latest and most improved types of reflector buttons, reflective sheeting, reflective spheres applied directly by Lyle to binder material overlaid on baked enamel, and reflective liquid coating.

Processes available include Lyle's famous deep embossing for highest legibility due to 3rd dimension, flat lettering and screen processing.



When baked enamel finish is indicated, LYLE provides the highest quality you can buy, and at competitive prices. The photo above shows a section of Lyle conveyor type baking ovens. Specially formulated paints are applied with controlled pressure. Then, carefully timed at controlled temperature, the finish is baked for a sparkling lustre, free from blemishes, blisters or cracks of any kind. Presto! An attractive, durable sign.

Write for Lyle's free Sign Manual B-55 and the name of your nearest Lyle Sign Representative, if you don't already know him.

Lyle SIGNS, INC.
2722 University Avenue S. E.
Minneapolis 14, Minnesota

Technical Council News

1960-61 Project Committees

Project committees for the current year are starting to put the finishing touches on the reports which they will present to their respective Department Heads at the Annual Meeting.

In accordance with the time table that the Technical Council is now following, project committees which got underway in 1960 will have completed their tasks by the Annual Meeting and will be discharged. To take their place in the continuing program of technical activity will be new committees chosen during the coming months. The new committees will undertake projects which were decided upon at the Technical Council meeting at the end of April.

As part of the Council's effort to keep the membership informed, the list of new projects will appear next month. All who are interested in working on a committee should look for this list and follow the instructions to be printed with it.

The project committees which have been working this year deserve recognition for their labors. As one small effort in this direction, a list of the committee members and the titles of the projects upon which they are engaged follows.

Department No. 2
Professional Standards, Education and Administration
C. C. Robinson, Department Head

Committee 2C (60)—Traffic Engineering Libraries—Henry M. DeNoble, chairman; Robert C. Chester, B. K. Cooper, Paul B. Graves, Randolph T. Gregory, Ellis C. Henry, Jr., C. Harold Miller, Charles Pinnell.

Committee 2D (60)—Traffic Engineering References—Roy B. Sawhill, chairman; Donald S. Berry, Donald E. Cleveland, Robert D. Dier, Henry K. Evans, D. Jackson Faustman, C. Dwight Hixon, Wolfgang S. Homburger, John W. Horn, Matthew J. Huber, James W. Schmidt.

Committee 2E (60)—Traffic Engineering Education—Howard E. Irby, chairman; Siegfried M. Bruening, Leon W. Corder, Ladis H. Csanyi, C. Harold Miller, Joseph C. Oppenlander, William S. Pollard, Jr.

Committee 2H (60)—Traffic Engineering Functions—Joseph C. Oppenlander, chairman; Douglas J. Carmody, R. D. Cowley, A. Wallace Gove, Henry S. Hulme, Jr., John I. Manning, Robert A. McNeil, Thomas J. Seburn, Harvey Shebesta, Ralph H. Sprungman, E. L. Walker, Jr., Robley Winfrey.

Department No. 3

Traffic Operations Measures
Kenneth M. Wilkinson
Department Head

Committee 3B — School Crossing Protection—Robert D. Dier, chairman; O. K. Anderson, J. A. Bruce, W. H. Claire, George E. Cogger, R. S. Deetz, W. G. Eliot 3d, C. A. Goodwin, D. J. Hanson, L. D. Kies, E. R. Klamm, Lawrence Lawton, W. H. Lemm, Guy D. McDonald, R. G. Still.

Department No. 4

Applications Of Traffic Control Devices
Samuel Cass, Department Head
Daniel J. Hanson, Asst. Dept. Head

Committee 4A (60) — Pedestrian Control Warrants and Procedures—Stanley T. Siegel, chairman; Edward F. Gervais, Harold L. Michael, Paul S. Robinette, James T. White.

Committee 4B (60)—Practices and Needs in Traffic Control and Surveillance as Related to Radio Frequencies—John H. Mitton, chairman; Ralph Michel, Edward F. Cleary, Bernard B. Twombly.

Committee 4C (60) — Pavement Edge Markings — James V. Musick, chairman; William R. Carrow, James H. Cox, Arnold G. Fisch, Armand E. Keeley, Edward A. Mueller, Robert C. O'Connell, Robert E. Titus.

Department No. 5

Geometric Design of Traffic and Terminal Facilities
Charles J. Keese, Department Head

Committee 5E—Driveway and Curb Permits and Design — Raymond J. Desjardins, chairman; Melvin Bierman, G. A. Byron, J. W. Challis, E. J. Clifford, S. A. Cunningham, J. M. Heidenreich, D. D. Kyrk, F. J. Sansom, I. B. Weinberg, E. C. Williams, H. B. Woodling, Stanley Woolman.

Committee 5B (60)—Survey and Evaluation of Freeway Design and Research — George A. Hill, chairman; Paul L. Heineman, Jack L. Noblitt, Matthew Platt.

Department No. 6

Transportation Planning
Donald S. Berry, Department Head

Committee 6A — Planning Criteria for Traffic Ways—Raymond C. Bergendoff, chairman; Jack Berman, E. F. Clark, D. E. Cleveland, R. R. Coleman, R. A. Keith, H. S. Lapin, W. R. McGrath.

Department No. 7

Design and Standards for Devices, Equipment and Materials
Marble J. Hensley, Department Head

Committee 7A—Traffic Control Signals—Karl A. Bevins, chairman; W. J. Addison, Nathan Avins, J. W. Barr, W. C. Brandes, R. E. Brown, S. E. Butterfield, D. E. Cleveland, R. W. Cottam, D. F. Dabney, K. C. Eichelberg, J. F. Exnicios, L. E. George, P. L. Green, Irwin Hart, G. W. Howie, John Hoxie, J. H. Kell, C. E. Leberknight, E. R. Leiser, Wm. E. Lenz, H. M. Leroy, R. G. Lewis, Jr., Aubrey Mathews, C. S. Michalski, Anthony Miscimarra, R. A. Overmeyer, W. H. Peterson, J. E. Reading, C. A. Rose, J. B. Rudden, R. W. Siver, R. H. Warr, E. L. Walker, Jr., William B. Wellons, Jr., J. F. Williamson, Jr.

Committee 7G—Traffic Survey Devices—E. Wilson Campbell, chairman; John L. Barker, Donald E. Cleveland, Eugene J. Clifford, George Graham, Bruce D. Greenshields, Daniel L. Gerlough, Richard C. Hopkins, Adolf D. May, Jr., H. A. Lopata, Robert C. O'Connell, Edward A. Mueller, Michael A. Powills, Jr., Wayne N. Volk, Thomas E. Young.

Committee 7B (60)—Traffic Signal Colors—Charles S. Michalski, chairman; Siegfried M. Breuning, Donald E. Cleveland, John Hoxie, James H. Kell, Lawrence Lawton, C. E. Leberknight, Donald M. McNeil, W. E. Schwanhausser, Jr.

Committee 7D (60)—Traffic Signal Lamps—William H. Mann, chairman; Walter J. Addison, Herbert A. Anderson, George C. Andreasen, Nathan Avins, Norman C. Barnett, Ormonde S. Levi, Fred J. Mano, Richard Smith, David A. Toenjes, Wilbert F. Watkins.

Coming Events

May 18-19—GEORGIA TECH CONFERENCE ON PARKING—
Contact: Director of Short Courses and Conferences, Georgia Tech, Atlanta 13, Ga.

June 12-16—CALIFORNIA SHORT COURSE ON FUNDAMENTALS OF TRAFFIC ENGINEERING—
Registration fee $15. Contact: Bob Glenn, Institute of Transportation & Traffic Engineering, University of California, Berkeley 4, California.

FOR MANY TRAFFIC ENGINEERING USES

THE...

Shalda MEASURE METER

Model D

Registers up to 10,000 ft. in feet & inches.

Direct Reading • No Bells • No Counting
No Computing • Fast Reset to Zero
Special for the TRAFFIC ENGINEER: Graduated in either 10ths or 12ths

The Shalda Measure Meter has been put to practical use by traffic engineers all over the nation. Its simplicity and accuracy has proven tremendously valuable in traffic engineering and has been accepted as a useful and practical tool.

- Rust, dust, moisture resistant, sealed in mechanism.
- Light, weighs only 3 pounds.
- Extension handle to 40 inches.
- Finest precision counters.
- Trouble free, factory lubricated.
- Handy, portable—only 23 inches long.

FAST!! SIMPLE!! ACCURATE!!

Automatically adds or subtracts. No other machine has this feature.

Just walk it ahead—the precision computer clocks off feet and inches like an automobile speedometer...with equally simple reading. To subtract—just back it up.

At only $49.50 will pay for itself many times over.

Distributed by
B. G. REILLY COMPANY
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— Dealer Inquiries Invited —

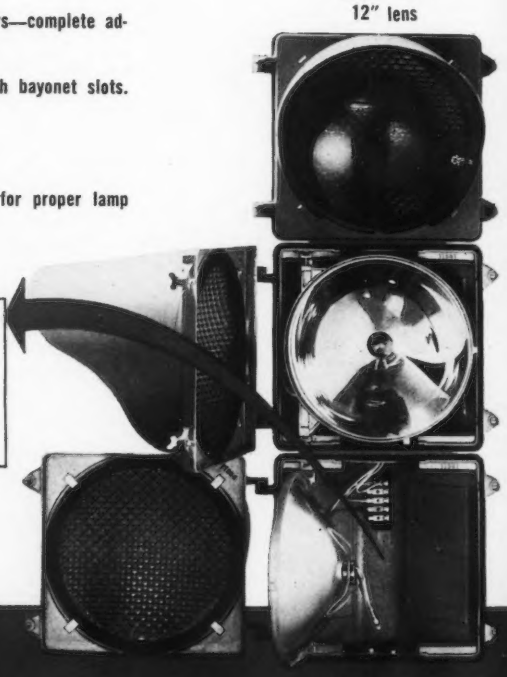
M-Series Signals

Featuring - The Traffic Signals, inc. "exclusives":

- **"Dzus" Aircraft type half turn positive lock and quick release door latches**
- **Original "Tri-Stud" section connectors—complete adjustability of individual sections**
- **Extra Diameter, oversize visors with bayonet slots. Rotatable 90°**
- **New Fixed Focus Lamp Socket**
- **Exclusive Fingertip socket rotation for proper lamp filament placement**

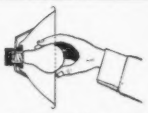
M–8
8" lens

M–12
12" lens



Spring-Lok Socket

1. Pull
2. Turn
3. Release



Lamp socket is Spring-Lok'd in place cannot vibrate loose. No tools required.

Write For Brochure TS-101 Covering The M-Series Line Of Signals And Beacons

Traffic Signals, inc.

ADVANCED ENGINEERING IN TRAFFIC SIGNALS AND TRAFFIC SIGNAL CONTROLS

P. O. BOX 1303 • 222 BEACH STREET • SHREVEPORT, LOUISIANA

July 10-12—WESTERN SECTION, ITE, ANNUAL MEETING—
Westward Ho Hotel, Phoenix, Arizona. Contact: Charles E. Haley, City Traffic Engineer, 112 S. Ninth St., Phoenix, Ariz.

August 21-26—WORLD TRAFFIC ENGINEERING CONFERENCE—
31st Annual Meeting, Institute of Traffic Engineers and International Sessions in Traffic Engineering, Sheraton-Park Hotel, Washington, D. C. Contact: ITE, 2029 K St. N.W., Washington 6, D. C.

September 24-29—ILLUMINATING ENGINEERING SOCIETY—
Technical Conference, Chase Park Plaza Hotel, St. Louis, Mo. Contact: IES, 1860 Broadway, New York, N. Y.

October 9-13—AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS—
47th Annual Meeting, Denver Hilton Hotel, Denver, Colorado. Contact: AASHO, 917 National Press Bldg., Washington 4, D. C.

October 15-18—AMERICAN TRANSIT ASSOCIATION—
Annual Meeting, Baker and Adolphus Hotels, Dallas, Texas. Contact: ATA, 355 Lexington Avenue, New York 17, N. Y.

October 16-19—NATIONAL SAFETY CONGRESS AND EXHIBITION—
Congress, Conrad Hilton, and other hotels, Chicago, Ill. Contact: NSC, 425 N. Michigan Ave., Chicago 11, Ill.

October 16-20—AMERICAN SOCIETY OF CIVIL ENGINEERS—
Annual Convention, Hotel Statler, New York City. Contact: ASCE, 33 West 39th Street, New York 18, N. Y.

POSITIONS AVAILABLE

(Continued from page 48)

CITY OF WICHITA, KANSAS

Position: Assistant Traffic Engineer.
Requirements: Graduate engineer with traffic engineering experience. Must be eligible for registration in Kansas.
Salary: Open.
Apply: Personnel Manager, City Building, 204 South Main, Wichita, Kansas.

CONSULTING FIRM, CANADA

Position: Traffic engineer, with progressive planning-engineering firm located in Canada.
Requirements: Qualified man who is an ITE Member or Associate Member and who is eligible to become a member of the Association of Professional Engineers of Ontario.
Apply: In writing, stating experience and remuneration expected, to: Director of Engineering, Project Planning Associates Limited, 40 Irwin Avenue, Toronto 5, Ontario, Canada.

CONSULTING FIRM, CHICAGO

Position: Traffic Engineer.
Requirements: Civil engineer with background in traffic engineering. Must be able to handle highway traffic assignments, capacity studies, and benefit-cost ratios. Background in route location studies for freeways and expressways also desirable.
Salary: Commensurate with experience.
Apply: Send letter and resume, or telephone, in strict confidence to: Meissner Engineers, Inc., 300 West Washington St., Chicago 6, Illinois, FInancial 6-7171, Mr. John Flaherty.

BIRMINGHAM, ALABAMA

Position: Traffic Planning Technician I to train for position as head of Signal Division, one of three divisions of the Traffic Engineering Department. Responsible for planning and designing traffic signal installations.
Requirements: Graduate Engineer or minimum of two years engineering study with three years experience in traffic engineering field.
Salary: $442-$537 per month. Good promotional opportunities.
Apply: Director of Personnel, Jefferson County Personnel Board, Room 606 Court House Building, Birmingham, Alabama.

Letter to the Editor

Dear Sir:

I read with interest Mr. Rotman's report on the Toronto Pedestrian Crossover Program published in the February issue of our magazine.

What I should like to discuss here is only the question of signing and marking.

Toronto uses the symbol of the crossbuck which is all the world over used and more or less reserved as a sign indicating a railroad-level-crossing.

Is it really useful and reasonable to use such an important symbol for another purpose? Would not such an additional use cause confusion and irritation?

I know, of course, that the countries of the Western Hemisphere do not use the signs fixed in the Protocol on Road Signs and Signals, signed in Geneva in September 1949. But I believe that there cannot be a clearer and easier understandable symbol than that laid down in the Protocol: the silhouette of a man walking at a crossing. It could be shown in any size thought necessary.

My other question is: Should not we all strive at the widest possible unification of road signs?

Is it really desirable that every town makes new signs without exploiting the existing ones, American or "European" ones?

These were my thoughts when reading Mr. Rotman's so interesting report.

J. A. FRAENKEL
Chief Traffic Engineer
Israeli Ministry of Transport

Section News

METROPOLITAN (N.Y.) SECTION

Notice of next meeting:
Date: Tuesday, June 6
Place: The National Arts Club
15 Gramercy Park
New York, N. Y.
Time: 6:00 P.M.—Cocktails
6:30 P.M.—Dinner and Films
7:30 P.M.—Annual Business Meeting

INDIANA SECTION

The Indiana Section of the Institute of Traffic Engineers cooperated with other sponsors in the planning and operation of the 47th Annual Purdue Road School held at Purdue University March 27-30, 1961. The Indiana Section planned and its officers conducted the separate sessions for Traffic Engineers held on the afternoon of March 28 and the mornings of March 29 and 30, held an annual banquet on March 28 at the Van Orman-Fowler Hotel in Lafayette and helped in the operation of a Traffic and Highway Engineering Information Room in the Memorial Center throughout the Road School.

A total of eighty-six members and guests attended the banquet on Tuesday evening. Dinner was preceded by a social hour.

President Siegel introduced the guest speaker for the evening, Mr. Alger Malo, Director, Department of Streets and Traffic, Detroit, Michigan and President, Institute of Traffic Engineers.

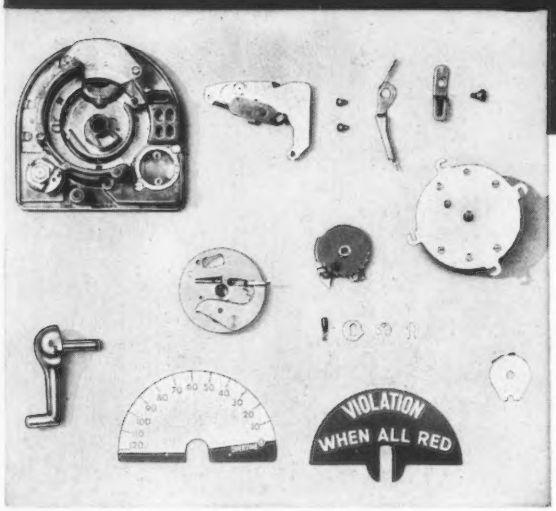
Mr. Malo first recalled the birth and history of local section organization meetings. He spoke about the value of the ITE workshop and the stand of the National ITE Board of Directors in relation to matters concerning local section operations.

He then reviewed the highly successful Freeway Operations Seminars which were held at various locations throughout the country and which were sponsored by the Institute of Traffic Engineers.

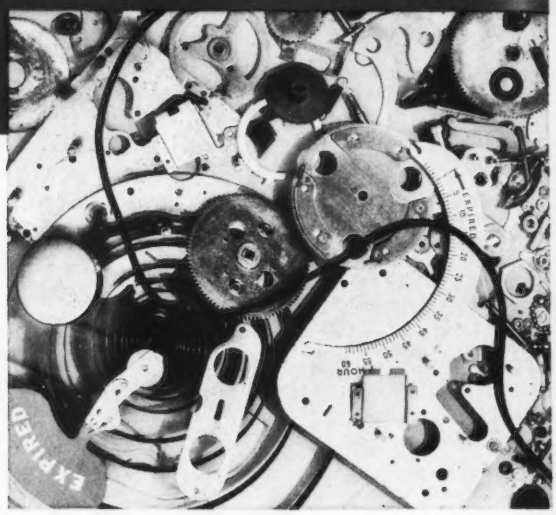
Mr. Malo closed his address by discussing various control aspects of expressway operation including TV surveillance, traffic signals at off and on ramps, speed limits, communications, and finally experiments which are now being conducted to improve the operation of freeways.

1/3 LESS PARTS IN "MARK-TIME" PARKING METERS

MEANS LESS MAINTENANCE!

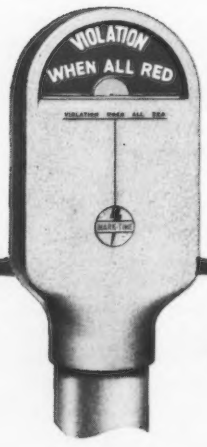


Note the simple uncluttered design of the few operating parts in the "MARK-TIME" meter.



In contrast, note the many parts used in a typical automatic meter which requires a skilled clock-maker to repair and service.

Remember: ANY "MARK-TIME" METER CAN BE SERVICED USING BARE HANDS AND A SCREW DRIVER.



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The Institute of Traffic Engineers welcomes applications from qualified traffic engineers, but does not desire as members persons who are unqualified. Listed below are the names of those from whom applications for membership or transfer in grade have been received since the last published list. Institute members are urged to review this as soon as possible and immediately inform the Executive Secretary's office if names of people are found who are known to be unqualified for ITE membership or transfer.

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Town Engineer, Municipality of Windhoek, South West Africa—for MEMBER.

BRANT, Austin E., Jr.
Associate, Tippetts-Abbett-McCarthy-Stratton, 375 Park Ave., New York 22, New York—for ASSOCIATE.

BURNHAM, Herbert Meredith, Jr.
Traffic Planning & Design Engineer, Metropolitan Dade County, Miami, Florida—for JUNIOR.

CADIEUX, Jean
Engineer, Design & Planning Section, Montreal Traffic Department, 1125 Ontario Street East, Montreal, Quebec, Canada—for ASSOCIATE.

CAPELLE, Donald G.
Research Assistant and Graduate Student, Texas Transportation Institute, College Station, Texas—for JUNIOR.

CAVALLERO, John Peter, Jr.
Traffic Assistant, Department of Traffic & Parking, City of New Haven, Connecticut—for JUNIOR.

De BIASI, Domenic
Traffic Signal, Highway Illumination & Electronics Engineer, Massachusetts Department of Public Works, Traffic Engineering Division, Boston, Massachusetts—for MEMBER.

EAGER, William Richard
Assistant Professor, Department of Civil Engineering, University of Colorado, Boulder, Colorado—for JUNIOR.

ELMBERG, Curt Martin
Chief Traffic Engineer, Gothenburg Transit Authority, Gothenburg 1, Sweden—for ASSOCIATE.

ERION, Lawrence Marvin
Second Deputy City Engineer, City of St. Catharines, Ontario—for JUNIOR.

FAILMEZGER, Ronald William
Asst. Traffic Investigations Engineer, Oregon State Highway Department, Salem, Oregon—for JUNIOR.

FRUDDEN, Bruce Oliver
Civil Engineer, Mead & Hunt, Inc., Consulting Engineers, 2320 University Avenue, Madison, Wisconsin—for JUNIOR.

GARDINER, Walter W., III
Assistant Traffic Engineer, New Jersey Turnpike Authority New Brunswick, New Jersey—for JUNIOR.

GAULT, Matthew Nixon
Resident Engineer, De Leuw, Cather & Co. of Canada Ltd., 226 Sparks Street, Ottawa, Ontario, Canada—for JUNIOR.

KING, George William
Traffic Design Engineer, New Mexico State Highway Department, 1120 Cerrillos Road, Santa Fe, New Mexico—for ASSOCIATE.

KRIER, Ainoth Holman
Graduate Student & Part time Research Assistant, University of Washington, Seattle 5, Washington—for JUNIOR.

La BAUGH, Wesley
Assistant and Project Manager, Edwards & Kelcey, Engineers and Consultants, 3 William Street, Newark, New Jersey— for ASSOCIATE.

LEMIRE, Andre
Professional Engineer Assistant to Divisional Engineer, City of Montreal Traffic Department, Montreal, P. Q., Canada—for ASSOCIATE.

LEVY, Edward Jacob
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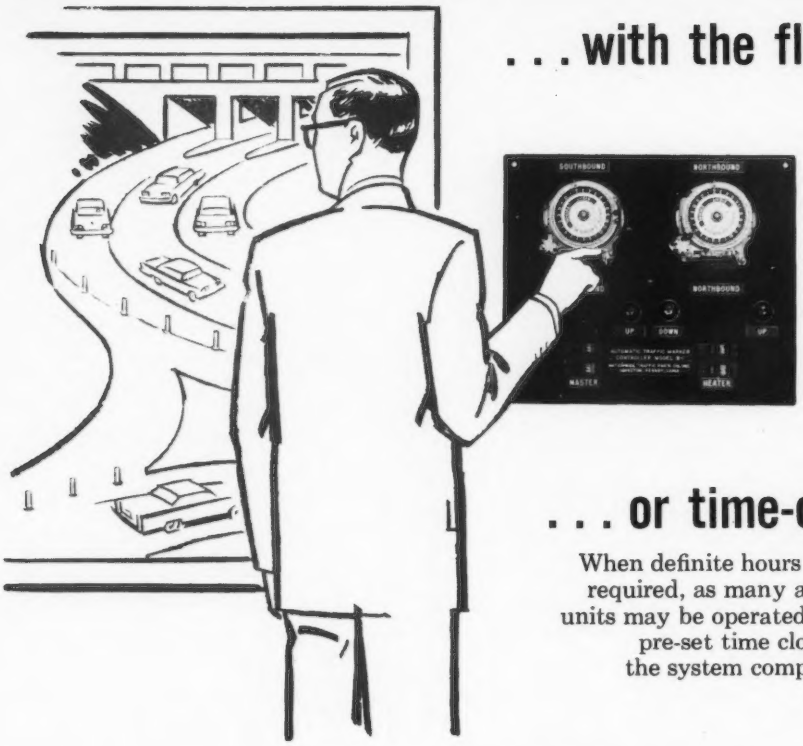

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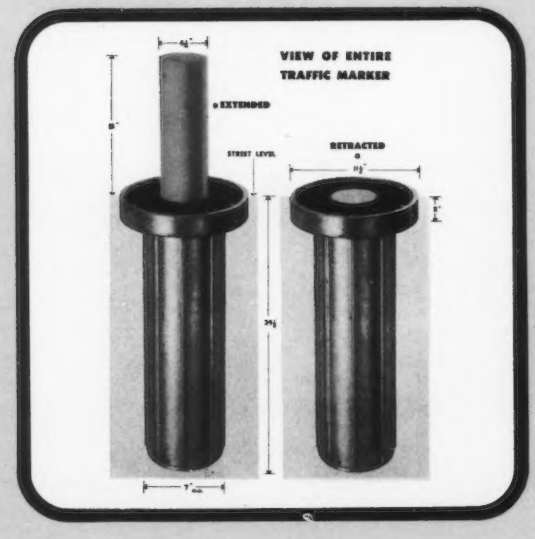

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(Continued from page 55)

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Engineer Inspector II, Missouri Highway Department, District 4, 5117 E. 31st, Kansas City 28, Missouro—for JUNIOR.

PAUL, John F.
City Traffic Technician, Police-Court Building, Traffic Bureau, Norwalk, Connecticut—for ASSOCIATE.

RATHBUN, Clayton Laverne
Jr. Civil Engineer—Traffic, City of San Diego, California—for JUNIOR.

REICHELDERFER, O. J., Jr.
Traffic Engineer II,Pennsylvania Department of Highways, W. 1st and Herr Streets, Harrisburg, Pennsylvania—for ASSOCIATE.

ROBBINS, John E.
Traffic Engineer, City of Saginaw, Michigan—for JUNIOR.

SCHAEFER, William Edward
Assistant Traffic Engineer, California Division of Highways, 1120 N Street, Sacramento, California—for ASSOCIATE.

SWAIM, Carlton H.
Assistant Traffic Engineer, Bureau of Traffic & Signals, City of Newark, New Jersey—for ASSOCIATE.

VESELKA, Herman James
Traffic Engineer, City of Arlington, Texas—for JUNIOR.

Applications for Transfer

BOUMAN, Martin J.
Transportation & Traffic Engineer, City of San Diego, California—for MEMBER.

FARMER, Justin F.
Traffic & Planning Engineer, Porter & O'Brien, Consulting Engineers, 1421 47th Avenue, Sacramento 22, California—for ASSOCIATE.

FOWLER, Paul H.
Traffic Engineer, San Diego County Road Department, San Diego, California—for MEMBER.

GILET, Jean-Louis
Traffic Engineer—Marketing Department, Societe Des Petroles Shell Berre, 42, Rue Washington a, Paris 8eme, France—for ASSOCIATE.

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Director, Department of Traffic & Transportation, Metropolitan Dade County, Miami, Florida—for MEMBER.

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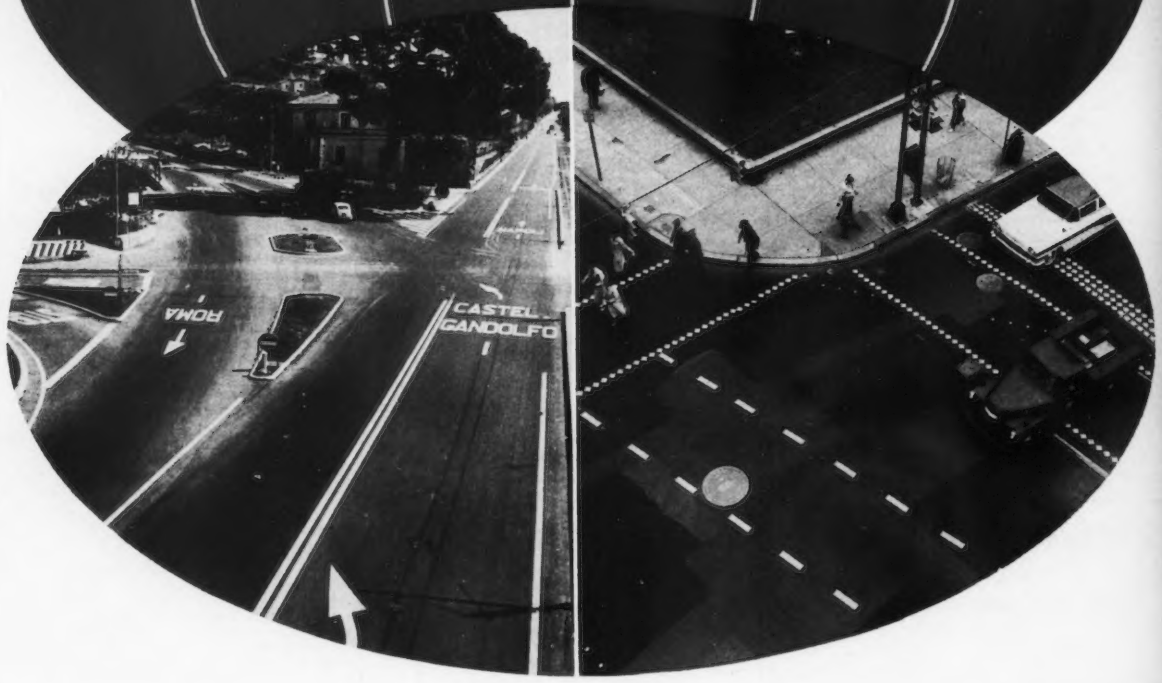

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